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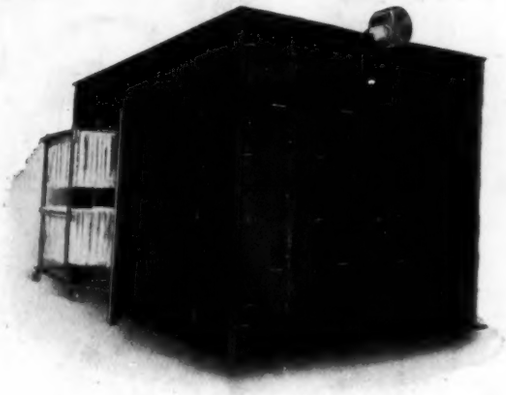
COTTON

JUNE, 1911.



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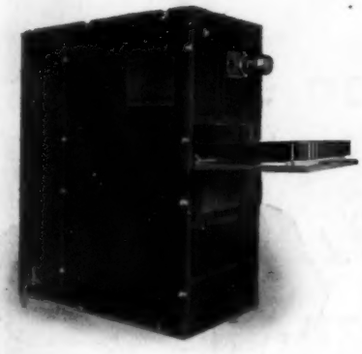

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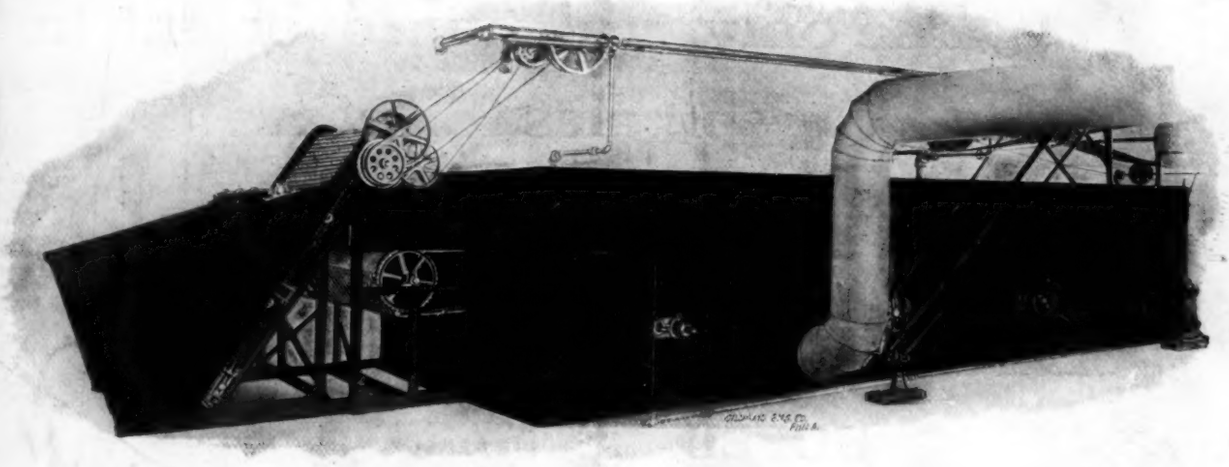

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COTTON

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SIGNS OF THE TIMES.

In the old conservative New England states, where matters of economic importance are carefully weighed in the balance and a decision reached only after the strictest application of business judgment, there is, today, a conflict of opinion among the textile leaders that is of international importance. Unquestionably the barometric signs of this group of Eastern states are watched by the entire industry and when prominent conditions develop, their application to other textile centres becomes a matter of universal interest. Such important conditions are now developing and it is of general interest to the whole industry to analyze and to speculate upon the results.

There is a decided element of pessimists represented by such prominent manufacturers as the Danielsons and Sayles of Providence, R. I., who have one thousand Northrop looms at their Ponemah Mills at Taftville, Conn., which have been fully equipped to operate for nearly a year but have never been started because of "unfavorable conditions and outlook." Then there is the Dwight Mfg. Co. interests of Chicopee, Mass., leaders in their lines of manufacture who, last weeek, saw the necesssity for shutting down 500 looms with their complimentary machinery. And it is possible to enumerate many other prominent manufacturing interests in New England, that are operating only a part of their machinery and are making ready for a continuance of this curtailment policy for some time to come.

The Bordens of Fall River who control the print goods market, have put into effect a curtailment policy by operating alternate weeks, because they can buy fabrics cheaper than they can manufacture. Mr. Borden is decidedly of the opinion that better times are ahead, but "far ahead." Other Fall River manufacturers are positively discouraged over the situation and will not continue to manufacture goods at a loss on each order received or warp put on the beam.

In New Bedford, there are rumors of heavy curtailment and proofs are offered of something like 13,000 idle looms. But in New Bedford, although some curtailment is in force, the wail of the pessimist, or the howl of the disgruntled is not heard. Far from it! On the contrary there are encouraging words from such great manufacturers as William Whitman, whose Nashawenna Mills are destined to become the largest fine goods mills in the world; encouraging words from the Pierce Brothers, who keep in the quiet and declare 20 to 30 per cent. dividends annually; there is nothing but optimism to be heard from the operators of the Acushnet and Hathaway Mills; at the Taber Mills they show the specifications for new machinery to be delivered this summer, and at the other prosperous fine goods mills in that great city there are indications of the preparations they are making for the avalanche of orders that will pour in later on.

In Danielson, Conn., the Cochranes are running out their warps at the Danielson Cotton Mills because they can see nothing favorable ahead; but in Plainfield, an adjacent town, Harold Lawton, the controlling factor in the highly

prosperous mills called by his name, has just broken ground for another big plant with an initial unit of 50,000 spindles and 1,000 looms and every cent of the money necessary to finance this new mill has come from his Lawton Mills stockholders, to whom he sent a circular letter last month. The underwriters of the issue did not get a share as the entire capital stock was subscribed for by Lawton Mills stockholders.

Way down in Old Town, Maine, C. C. Garland is whipping things into shape for the erection of a fine goods mill with 50,000 spindles for an initial unit and more to follow. This promotion has been considered for over a year, but now Mr. Garland feels absolutely confident that the class of fabrics he proposes to manufacture will become the market leader just as soon as business revives and in his opinion that time is not far off. In New York City the Consolidated Cotton Duck Co. are preparing for greater activity than ever before. General Manager Armitage has gone to England to purchase new machinery so that when the orders do come they will be in a position to care for them.

These reliable facts have been presented to the textile world for discussion and analysis. They have been garnered from reliable sources by an observant manufacturer who believes that this great industry of ours is rapidly approaching the point of revival and with a little more patience exercised, we shall all soon be out of the depression and working harder than ever before to fill orders.

HONESTY IS THE BEST POLICY.

A prominent Japanese cotton manufacturer, who spent the month of May in this country buying textile machinery, made the remark to a group of textile machinery men that America lost her export trade to China largely because of rank dishonesty and that our manufacturers have no one to blame but themselves. When pressed further for the facts, he stated that up to two years ago, one particular mill in Georgia sold its entire output of sheetings to two large jobbers in Canton and Hong Kong, China, who branded the goods with Chinese characters, indicating the origin of the fabrics to be in England. For years these sheetings commanded a very broad market and the mill manufacturing them made a splendid profit. But it became a case of the mill not being able to stand prosperity and for over a year during 1907 and 1908 this particular mill shipped hundreds of cases of sheetings to China labelled so many yards to a case while every yard measured only 35 inches. This deception resulted in the loss, to the mill, of the Chinese market and today that particular mill is manufacturing for domestic consumption only.

Another flagrant case of fraud was told of by the Oriental as follows: "Last fall, an associate of mine purchased five cases of converting goods in the Chinese market and sent them to a European finishing plant. In due course of time word was received from the converting plant that there was a material shortage in lengths. The invoice called for a certain number of yards while the converters or finishers reported something like a 10 per cent. shortage. My friend advised the finisher to measure every piece and report. Well! The gist of the story is that one of your largest New England mills made a settlement to my associate in order to avoid a lawsuit and publicity."

Another interesting case was referred to but no names given. This gentleman purchased at an auction the assets of a Chinese merchant who handled American drills and light weight ducks. Among the correspondence which was found in a letter file was a copy of a letter addressed to a Boston commission house and in which it specifically stated that 2.80 drills were to be branded as 2.50 goods, the case so marked and the invoice so made out. This was done two years ago when prices of fabrics were slightly advanced.

Numerous other cases of dishonest relations between mills, jobbers and consumers were told and the machinery men were unanimous in the opinion that this particular Japanese cotton manufacturer believed that Americans were all dishonest.

There is another side to this matter, however, and that is the probability of shrinkage in the fabrics. While of course the warp would not shrink as much as one inch under any ordinary, or even extraordinary weather conditions, there is a theoretical shrinkage in goods that have been shipped a few thousand miles over the seas and then stored in Chinese warehouses. Another point of defense might be that where mills are ordered to ship fabrics under particular brands and marks they must follow the definite instructions, even if goods 35 inches long are to be marked as 36 inches or one yard. Perhaps, after all, the Chinese jobber or commission man should be blamed by this Japanese gentleman instead of the American manufacturer.

WHERE THE FOREIGN SERVICE AIDS.

Advices from the Department of State report the receipt from Guy R. Love, the American vice and deputy consul general at Adis Ababa, Abyssinia, wherein he reports concerning a recent visit of Edward C. Suffern, of 90 Wall Street, New York City, to Adis Ababa. Mr. Suffern spent some six weeks in Adis Ababa, during which he concluded arrangements with a local firm, the Imperial Ethiopian Rubber Regie, for the importation into Abyssinia of American cotton sheetings to the value of about $750,000, to be made in shipments extending over a period of three years.

Mr. Suffern arrived at Adis Ababa in company with the agent of the Max Kelin Co., of Aden, Arabia, a branch house of Abe Stein & Co., of New York City. Mr. Love reports that this firm has opened agencies at Dire Dawa, Harrar and Adis Ababa for the exportation of skins and hides and importation of American cotton sheetings. The Department of State is naturally gratified at these evidences of the re-establishment of what was once an extensive trade with Abyssinia, a portion of which has been lost to this country for some years.

NOTICE TO S. T. A. MEMBERS.

Any member of the Southern Textile Association who has made any change in his position or address since the publication of the Roll Book and minutes of the last meeting, will please notify me at once, so that he may be properly represented in the roll of members to be published in connection with the proceedings of the next meeting, of which further announcement will be made in due time.

G. S. ESCOTT, Secretary,
Charlotte, N. C.

THE HEART OF THE COTTON COUNTRY

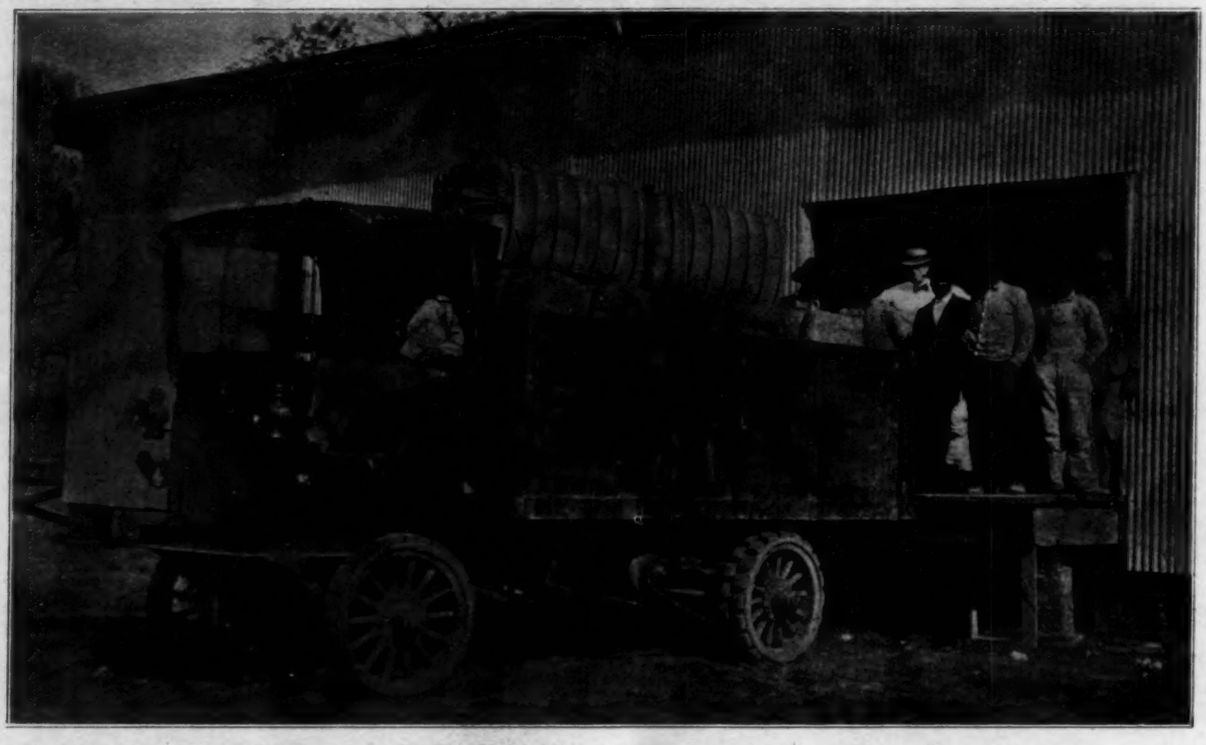
The Delta Planter and His Resources—Modern Machinery and Methods Materially Aid in Mississippi Cotton Culture.

(Contributed Exclusively to COTTON.)

BY HARVIE JORDAN, ATLANTA, GA.

The proud possessors of a landed principality, located in the very heart of the most fertile agricultural section in the world, the cotton planters of the Mississippi Delta are among the most prosperous and independent planters of this, or any other nation. The Delta of the Mississippi commences a few miles south of Memphis, Tenn., and extends to the Gulf of Mexico, widening at some points to 100 miles on the eastern side of the great river, and embracing such tributaries as the Yazoo, Tallahatchie and others.

At one time an arm of the Gulf of Mexico must have extended inland over this favored territory. As late as thirty years ago the Mississippi river in periods of high floods extended eastward over its normal banks to a distance of from 50 to 75 miles. These oft recurring overflows extending back through the ages, making rich alluvial deposits of vegetable matter, gradually built up above the clay sand foundation, a fertile soil from 5 to 30 feet deep, incorporating all the natural elements of plant food in apparently inexhaustible quantities. With the co-operation of the Federal and State governments in building substantial levees along the banks of the Mississippi, and its tributaries, this favored section of the cotton belt has within recent years been opened up to the operation of the largest and finest cotton plantations in the South.



GRAMM AUTO-TRUCK LOADED WITH 14 BALES OF GIN-COMPRESSED COTTON AT RACE TRACK PLANTATION.

GREENWOOD, LEFLORE COUNTY.

The section of the Delta to which I desire to particularly refer in this article embraces the county of Leflore, Miss., and the county site of which is the progressive little city of Greenwood, both named for Greenwood Leflore, the celebrated Choctaw indian chief, who died at his magnificent country residence, "Malmaison," about thirty years ago. His wife died last year at the age of ninety, and some of his decendants still reside on a part of the vast estate which he at one time possessed as a gift from the Federal Government.

The Delta lands of Leflore county lie along the banks of the Yazoo and Tallahatchie rivers, both of which are navigable, the Tallahatchie being especially notable for the greatest length of navigation of any river of similar size in the world. The rich alluvial lands on both sides of these rivers, extending back for several miles, are level and free from rocks. The soil is principally a dark mulatto with just enough sand, grit and buckshot pebble distributed through it to make it pliable and easy for cultivation with plow and harrow.

The type, or character of the cotton raised on the best of Delta lands is known in the cotton trade as "staple cottons," running in lengths from 1 1-8 to 1 5-16 inches, according to the variety of seed planted. This staple cotton sells at a very high premium over

ordinary market quotations for short staple up-lands, the average price for 1 1-8 staple the past season being 20 cents per pound, on up to the 28 cents for 1 5-16 inch. Nowhere else in the cotton belt of the South can cotton be grown combining the same length and strong breaking strength of the staple as on these fertile Delta soils. Cotton of the same length can be, and is grown outside of the true Delta lands, but the fiber is weak and does not possess the breaking test of the yarns made from pure Delta grown staples.

HOW SPINNERS ARE AFFECTED.

For the reason above stated, spinners at times lose heavily in the manufacture of yarns from inferior cotton shipped to them under the name of Delta staples. Practically all the sales of these staple cottons, as to length, grade, etc., are sold to the spinners on samples representing the pure Delta type, while the shipments oftentimes contain cotton of the same length, but raised on inferior soils and which does not possess the full tensile strength of Delta cotton. This confusing and mixing of staples of the same length, but varying in tensile strength, is the fault of the interior cotton merchants. Oftentimes these interior cotton buyers assemble cotton within a radius of 100 miles at large compress plants located in the heart of the Delta territory, and mix in with their Delta cottons a lot of cotton of the same length and grade, but raised in the hills, and inferior in strength of staple.

The hill cotton does not command the same premium to the farmers who produce it as does the Delta cotton, but when the buyer combines the two, he sells to the spinners on the basis of Delta staple values and collects full premium for the round lot. The shipment goes into the spinners warehouse and the mistake is not discovered until the staple is woven up into yarns, and then the result of what promised to be a good trade for the yarn spinner is spoiled.

Those mills which are dependent upon Delta staple cottons have grown tired of this system of concentration of Delta cotton with hill cotton, and the consequent mixture of staples in shipments from large compress points. They are now seeking to individualize the staples of Delta cottons under somewhat similar rules and regulations as apply to cotton raised in certain districts of Egypt and India.

The Delta planters are also becoming aroused to the fact that their special types of cotton, which cannot be grown anywhere else in the world, so far as strength of staple is concerned, are not receiving fair treatment under the present system of handling cotton, and that they are suffering both in price and reputation through the greed and avarice of some of the cotton buying firms who at present stand between them and the spinners of their cotton.

150 DELTA PLANTERS AT AN OLD-FASHIONED BARBECUE. S. F. JONES' RACE TRACK PLANTATION, NEAR GREENWOOD, MISS.

The plan most favorably considered by both spinners and Delta planters, is to adopt the system of gin compression and the direct shipment of each planters' crop from his immediate railway station to the spinners' factory. Each gin compressed bale is to have a metallic tag attached to one or more bands on the bale, giving the name of the owner, or plantation where grown, and thereby carry the identity of the grower and location of plantation direct to the spinner.

The average production of cotton on the Delta plantations in Leflore and surrounding counties is from 500 to 2,000 bales, and in some cases reaching 3,000 bales per annum. The open area in cultivation, producing cotton, corn, alfalfa, peas and other crops on such plantations, average from 1,000 to 5,000 acres under one management. Prac-

tically all of these plantations have their own gin plants, saw and grist mills under the management of a competent machinist. The headquarters of these plantations are all within easy reach of railway stations, or river landings, and can therefore make shipments direct to the spinner under the new system. Many of the planters already have their local cotton warehouses for the storage of their crop, until sold, and more new ones will be built this year.

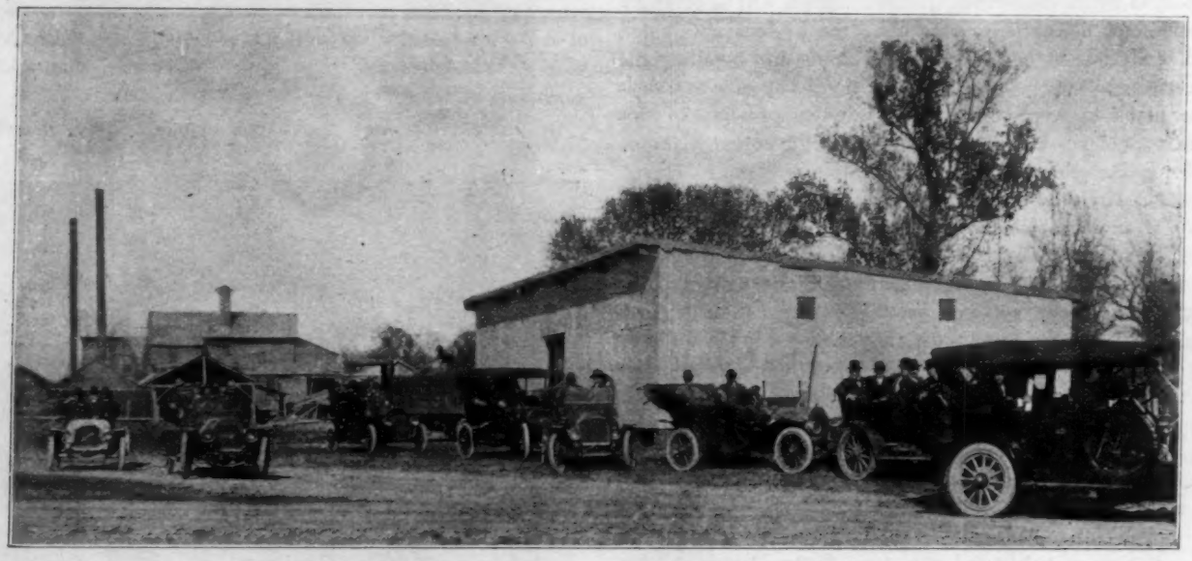
FRANK JONES, A PROGRESSIVE LEADER.

S. F. Jones, the owner of the celebrated "Race Track" plantation, located in the bend of the Tallahatchie river, six miles from Greenwood, is the pioneer and leader in cooperating with the spinners to reform the old methods of baling and handling Delta cotton, and especially to secure shipments from Delta planters to the spinners' mills. He has this season gin compressed his entire crop of 2,000 bales, stored it in his warehouse adjoining his ginnery, and handled his samples and shipments under the personal supervision of a first-class cotton expert. Every bale shipped went to the spinner tagged with the name of his plantation and each shipment went forward promptly without delay or rehandling at a large compress. He has also introduced the use of the auto truck and in the accompanying illustration is shown a truck of four tons capacity loaded with 14 bales of gin compressed cotton to be delivered in 20 minutes at the cars in Greenwood, six miles away, for loading and shipment. One shipment of 200 bales of his crop this season went direct from his plantation to the Victor Mills, Greers, S. C., and Lewis W. Parker, president of the mills, has written Mr. Jones a letter stating that this shipment of gin compressed cotton, with staple and grade guaranteed by the planter who made the shipment, is the best and most satisfactory lot of cotton which has ever been received at any of his Carolina mills.

On this plantation the baling machinery of the Farmers Gin Compress Company, Memphis, Tenn., is used, and turns out a neat 500 pound package, covered with four yards of light Burlap, seven bands eight feet long, with a total tare of only eleven pounds, and with a uniform density in compression of 30 pounds to the cubic foot. From 75 to 100 bales of this cotton is easily loaded into a box car, 75 bales being the minimum load for an ordinary 34-foot car.

On March 23rd Mr. Jones gave an old-fashioned barbecue and a demonstration of his new system of baling, warehousing and handling the cotton crop on his plantation, at which 150 Delta planters were present. The accompanying illustration shows the planters seated at two long tables under the shade of giant white oaks in a beautiful grove. The public roads in the Delta are level, smooth, and in open weather are among the finest for travel in the United States. Practically all of the larger planters own automobiles, usually a large touring car for their families, and a smaller 30 to 40 horsepower for their individual use.

One of the illustrations shows a number of cars with their owners and friends ready for departure to their homes 20 to 40 miles away, on the day of the barbecue above referred to. The type of country residence at present so popular among the planters in Leflore county, is fittingly represented in the illustration. The modern Delta residence is splendidly carpeted, furnished in mahogany, quartered oak or maple, has baths, hot and cold water connections with all rooms, and lighted with Acetylene gas.



THE DELTA COTTON PLANTER'S MEANS OF TRANSPORTATION.

Flowing Artesian wells provide abundant and pure water on these plantions for both man and beast. Aside from the riding bosses, storekeepers, superintendents and machinists, the labor on the plantations is all colored. Negro labor is plentiful and gives the most satisfactory service to the Delta planters under their present system of extensive cultivation. The average annual net income from many of these large plantations at the present time is from $25,000 to $75,000. Each plantation has its supply store patronized by the labor employed for wages, croppers, or tenants, and many of the planters hold official positions or are leading stockholders in the local banks.

PLANTER, MERCHANT, BANKER AND COTTON FACTOR.

The Delta planter is therefore planter, merchant, and banker, and they are now preparing to organize their cooperative companies for handling their cotton crops direct to domestic and foreign spinners. The first local cotton company of this kind, which marks a new era in the interior

cotton trade, to be organized in the South, was formulated by S. F. Jones when many of the planters of Leflore county gathered together on the day of the barbecue at "Race Track" plantation March 23rd.

The basis of the subscription to this new cotton company was placed at one dollar per bale, and $25,000 was subscribed during the day, representing the normal production of 25,000 bales per annum, gross, by the subscribing stockholders. By April 18th the subscription had reached such an amount that immediate steps were taken to secure a charter. The newly organized company is known as the Yazoo & Mississippi Valley Cotton Company, and has a capital stock of $100,000.

The plan outlined, is to select one of the best and most expert Delta staple cotton men which a lucrative salary can command to head the new cotton company. Then to send him out among the cotton milling districts of the South and New England to secure the best connections among the spinners' brokers. Their cotton representative will also attend the coming Cotton Congress to be held at Barcelona, Spain, at which conference special attention will be given by the spinner delegates to reforming the present antiquated and wasteful methods employed in baling and handling the American cotton crop, and the adoption of specific and definite plans to secure square bale gin compression in this country and nearer direct dealings with the cotton planters.

From Barcelona, their representative will go to Havre, Bremen, Manchester and Liverpool, making cotton connections with European importers at each point. The attractive feature of this local cotton company to the spinners will be in the securing of prompt shipments and delivery, economic baling, and getting absolutely the grade and staple bought. The incorporators of this company propose to build up for themselves a preferential trade with the spinners, which as time rolls on will enable them to get a premium for their shipments over the ordinary cotton market, and make other savings through the adoption of modern economies in the better baling and handling of their crops direct to mill centers.

Similar cotton companies in the Delta will be formed from time to time and the type of cottons produced in that peculiarly favored section of the South, will ultimately get to the spinners carrying the identity of the plantation upon which it was produced. The planters in the Greenwood section are enterprising, modern and progressive. They are cultivating the spirit of concentration and cooperation in the handling and marketing of their splendid agricultural products. Recently a large number of them assembled at Minter City and within a few hours bought the Minter City Cotton Oil Works, a $60,000 enterprise and will operate this mill ten months in the year with the cotton seed grown on the plantations of the stockholders. They propose to handle both their cotton and cotton seed in such a way as to give them the fullest measure of maximum values.

TILE DRAINAGE BECOMING POPULAR.

Thousands of dollars are being annually expended on many of the large plantations in the installation of tile drainage under the supervision of competent civil engineers. Lagoons and swamps covered with timber and wafer a few years ago, and which were the breeding places of mosquitoes and malaria, have been drained, put into cultivation and are now producing a bale of cotton, or 60 bushels of corn per acre. Fields which have been in cultivation for many years are made more productive, and can be cultivated to much better advantage when thoroughly tile drained. Each planter is investing a goodly portion of his annual net earnings in the tile drainage of his open lands and finds the investment a most beneficial one. The average market price of well improved Delta lands at the present time are from $75.00 to $125.00 per acre.

One of the successful pioneers in the development of the Delta lands in Leflore county on the Tallahatchie river, is James Towns, who lives across the river from Minter City. Mr. Towns came out of the Civil war in 1865, a young man without means, but abundant energy, and settled where he now resides, on a small farm of 80 acres of open land in the midst of a great virgin forest filled with wolves and bears. Within the past 45 years he has cleared and put into cultivation 25 miles of river front, his plantation now reaching from bank to bank of the Tallahatchie in the gradual bend of the river, and embracing many thousands of acres of the most fertile soil in the Delta. Like a village set in a valley, the broad acres dotted with the white coated cabins of his laborers, can be seen and the magnificent residences of his sons, two to three miles apart, each son now the possessor of a landed principality with the soil and crops cultivated with all the latest and most approved modern plantation machinery.

On this plantation are four negro schools and five churches, all built and maintained at the individual expense of Mr. Towns. In a ride with him over this estate a few weeks ago, he informed me that there were now 365 negroes, old and young, who were born and reared on his plantation and had been with him all their lives. He has a "Poor Farm" within a mile of his residence where he quarters the old and worn-out negroes, whom he supports in comfort so long as they live. I do not know of a similar instance in this country where the labor on a plantation has been so satisfactorily held together and managed. The negro labor, however, in all parts of the Delta appear to be happy, contented and well provided for.

RESIDENCE OF S. F. JONES, RACE TRACK PLANTATION.

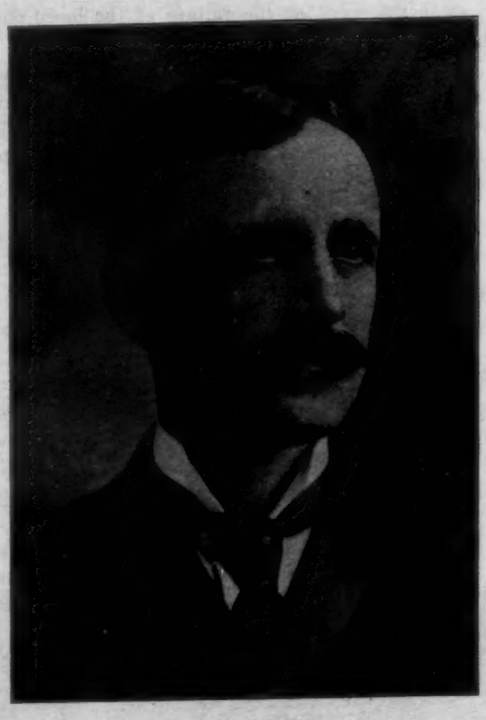
ENGLISH BUYING DELTA LANDS.

I notice that within the past two or three years the English spinners have begun to buy up large bodies of Delta lands, embracing many thousands of cleared and cultivated acres. Their reason for doing this is said to be largely for the purpose of producing the actual needs of their mills and to become independent of the fluctuations in the market prices of

cotton; and further to be in a position at all times to secure the actual staples and grades which they consume.

When it is borne in mind that nowhere else in the world can the same staples of cotton be grown, and that the territory for its production is quite limited in area and becoming more so on account of the encroachment of the Mexican boll weevil, while the demand is ever increasing, those mills which by purchase of the Delta lands, or otherwise, secure control of this valuable staple, will have within their grasp a monopoly in the textile industry which cannot be overcome.

It will be exceeedingly unfortunate for the future of American cotton mills and the Southern cotton planters, if these rich and fertile lands are alllowed to be gradually absorbed by the foreign spinners at the small, yet apparently



HARVIE JORDAN.

attractive prices of $100 per acre. Each acre can be made to produce in cottton the value of the land in a single year, at present values. English spinners now own and control many thousands of acres of cotton producing lands in Egypt which cost them $1,000 per acre, but which cannot in any sense compare in true value as to fertility and productiveness to the Delta lands of the Mississippi and its tributaries.

Twenty-five years from today $100 per acre for these lands will be as cheap as the prices of $5.00 and $10.00 per acre paid twenty-five years ago appear today. The best annual production of the entire Delta will not now exceed half a million bales, and the peculiar strength and type of the staple can not be produced anywhere else, either in this country or in foreign lands. To hold this natural monopoly as a heritage to be handed down to future generations in this country, and to foster and protect it as far as possible for consumption in American mills is a matter which should receive very serious attention.

So valuable a birthright should never be converted into British gold—to be dissipated and probably lost in the doubtful avenues of commercial enterprises. The Delta planters as they exist today, are unlike any other agriculturalists in the world in many respects. There is a bigness and broadness in all things they do comparable only to the wide extent of their expanding acres, blessed as they are by a soil and climate not to be duplicated beyond the confines of our own sunny Southland. The increasing wealth from their landed estates enables many of them to travel each year abroad, and to increase their opportunities for culture and refinement. Their boys are being educated at such institutions of learning as Harvard and Princeton, while their daughters are attending the finest female colleges in the whole country. To succeed in their chosen profession of agriculture and to be important factors in the building of the nation and a higher type of cultured and refined citizenry, is the ennobling ambition of the Delta planter.

A PLAN TO SECURE EXPORT TRADE.

American manufacturers are invited to file with each American consulate a statement respecting the lines of goods they have to offer foreign buyers. They have had the privilege of filing catalogues in the consulates, but the diversity of size and form of catalogues and other printed matter thus far filed, and the filing of this printed matter in English in consulates requiring other languages, has entailed unnecessary time and expense in clerical force, correspondence and translation work in the consulates. It is now proposed to obviate these disadvantages by asking each manufacturer to prepare a brief of his catalogue or printed matter according to card index specifications, these cards to be classified in card index files under proper headings, and to print same in the various commercial languages.

The importance to American commerce of this co-operative plan arranged between the Department of State and The Commercial Bureau Co., for placing with each American consulate an encyclopedia of the industries of the United States, can scarcely be over-estimated. It is the perfection of system whereby the manufacturer, through the American consular service, may reach all the more important consumers of his products throughout the world. The system permits of additions and corrections being sent at regular intervals to the consulates' files, so that they are at all times a living, growing and up-to-date directory of American industries such as is impossible under any other plan or method. To make the work comprehensive and valuable to each, it is essential that the co-operation of all manufacturers and producers interested be secured. The classification, compilation and distribution of the cards in cabinets is the work of the Commercial Bureau Co., which, in accordance with arrangements with the Department of State, Washington, D. C., is done without charge to the manufacturer. Full particulars will be given by The Commercial Bureau Co., 50 Church Street, New York City.

Consul-General John H. Snodgrass forwards from Moscow printed leaflets in the Russian language advertising American goods. A Moscow firm has undertaken this work at its own expense, expecting recompense in orders which the circulars will bring. The leaflets are on file for public inspection at the Bureau of Manufactures.

SOME OF THE DISADVANTAGES OF COMBINATIONS AND DIRECT SELLING.

(*Contributed Exclusively to* COTTON)

BY HASTINGS.

The combinations of cotton mills is an economic question, which should be considered from the standpoint of the best interests of the trade. There is no doubt that combinations are a logical outcome of unhealthy competition and it is a feature that must be recognized in thhe evolution of the industry. The one great advantage to be gained by consolidation is that formerly the various products were priced by as many men as there were products, whereas by combining these products there is one price maker instead of the many, thereby reducing competition. Another advantage would be the use of large capital to handle the buying of materials, manufacturing and distributing of product.

As far as the reduction of cost in each mill unit is concerned it is still a question if there would be any material saving. The large combination might with its resources purchase a year's supply of cotton when it was thought to be cheap, which perhaps the individual mill could not do. At the same time, this might prove to the advantage of the latter, as there might be an error in judgment on the part of the former, which would prove expensive. The combination would naturally take in established plants, whose machinery was more or less antiquated or at least had some of the life taken out of it, while on the other hand, a new mill with all the latest improvements in machinery and built for a specific purpose could produce yarn and goods more advantageously than the larger combination.

It is also a fact that in textile manufacturing there is a certain amount of the personal element that goes towards successful operation, and this is many times done more thoroughly by a management largely interested in the enterprise than by merely a paid employee. The distribution of mill products requires a great amount of labor, expense and experience. It is necessary to know whom to sell, how much to sell them and what will be satisfactory for the purpose used and what mills can best meet the requirements of the different buyers. It means efficient organization with salesmen, clerks, credit men, etc., at great expense, which goes on whether sales are made or not. The individual mill, which is properly capitalized can dictate how they will sell their product quite as well as a combination.

The great trouble with many mills is their lack of working capital and not accumulating a reserve from good times to carry them over a dull period; in place of this the earnings are paid to hungry stockholders or put into more brick and machinery without regard to the necessary funds to carry on the increased business.

Some years ago, a merger of certain New England mills was formed, and at the start sold their product through commission houses, but without warning this method was changed to selling their entire product direct. It was only a short time until it became necessary to reorganize this combination on a much lower cost per spindle, The results of taking this source of supply from the commission men was the building of many mills to supply their trade with yarn. This and the great over-expansion in industrial lines throughout the country brought a natural result of over production and until the consumption catches up with the production there will be no good business with or without combinations.

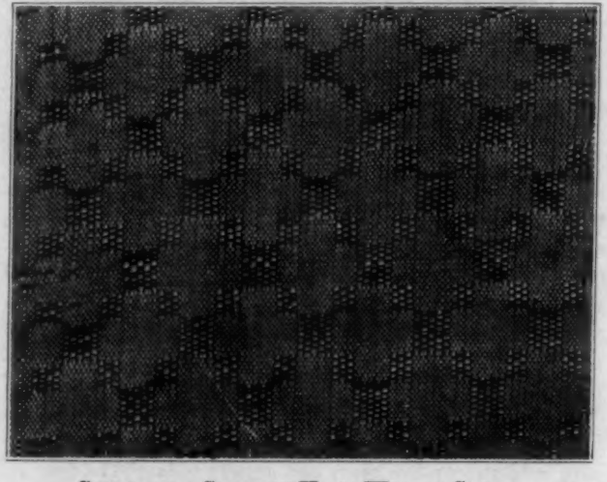
At the same time, combinations will be formed, but it is a question which is the better at this time, large and possibly unwieldly combinations, or smaller combinations which are formed on an actual value basis and that can be handled properly. It must be understood, particularly in the yarn trade, that where there is one large consumer there are a dozen small ones, and the credit from high to practically nothing.

It would seem the part of wisdom to realize the situation and for the best interests of the trade, to make haste slowly, as in the event of the failure of the large combine to make good, the conditions would be worse than at present. It must also be borne in mind that commission men who have spent their lives in the business would naturally put their energies with the mills outside of the combination and also build new mills with the latest of everything known to cotton manufacturing.

CHINESE HAND-WOVEN CLOTH.

The accompanying illustration shows a sample of cotton cloth woven on crude hand looms, made on the Japanese model, operated by a vertical string.

This cloth was obtained from a mill in Kiangyin on the Yangtze, 100 miles from the mouth of the river. The mill is equipped with these hand looms, and employs 600 people. While there was much confusion and the looms were awkward and unfinished in the extreme, yet this cloth was woven in many creditable designs. A roll of 50 feet cost about $2.54 United States currency. It is said that nearly



SAMPLE OF CHINESE HAND-WOVEN CLOTH.

one-third the women and children of the city of perhaps 50,000 people are engaged in the industry, which is supplemented by a steam power spinning mill; thus far, foreign cotton is used. It is noted that American piece-goods dealers are complaining not only of cheap Japanese goods and the practice of peddling in the villages with credit given, but of increasing output of Chinese-made goods. The sample shown is a diamond effect cotton dress-goods pattern, made of two-ply mercerized white filling, and two-ply mercerized black warp.

American Cotton Manufacturers' Association.

The fifteenth annual convention of the American Cotton Manufacturers' Association was held this year at the Jefferson Hotel, Richmond, Va., on May 18th and 19th. The social end of the convention, however, began early on the 17th and throughout the day the lobby of the Jefferson resembled a huge reception hall, where the arriving delegates were warmly greeted by other delegates who had preceded them to the scene of the convention. As this was the third time the Association had met for convention in Richmond, many members also had Richmond friends on hand to join in greeting them.

One of the preliminaries to the convention was the dinner given in the palm rooms of the Jefferson on Wednesday night by President D. Y. Cooper of the American Association to the officers and Board of Governors of the Association and a number of invited guests, covers being laid for about fifty people. President Cooper presided and speeches were made by Arthur H. Lowe, president of the Lowe Manufacturing Co., of Huntsville, Ala.; Franklin W. Hobbs, of Boston, president of the National Association of Cotton Manufacturers; John Skelton Williams, of Richmond, president of the Georgia Southern & Florida Railroad; W. A. Erwin, chairman of the Board of Governors and treasurer of the Erwin Cotton Mills Co., of Durham, N. C.; Capt. Ellison A. Smyth, of Greenville, S. C., the accredited head of the new Pelzer Corporation; and Mayor D. C. Richardson, of Richmond.

Among other guests present were Secretary Woodbury of the National Association of Cotton Manufacturers, G. W. Watts, S. B. Tanner, James R. MacColl, J. S. Carr, Jr., G. B. Harris, Ridley Watts, Arthur Marsh, Scott Maxwell, Thomas H. Rennie, Jesse P. Eddy, Jr., C. H. Moody, T. W. Crews, Cæsar Cone, John M. Miller, Jr., A. C. Zollicoffer, R. M. Miller, Jr., Carroll Baldwin, W. T. Taylor, J. T. Jennings, E. T. Wingo, Alex. Cooper, R. S. Reinhardt, J. S. Moore, Thos. F. Parker, E. P. Murray, William H. Harriss, C. B. Bryant, Stuart W. Cramer, W. E. Beattie, J. W. Carrington, Wm. E. Hooper, Herbert Jackson, H. E. Owen, and Lewis W. Parker. Following the dinner the board of governors held a brief meeting and decided upon the final details of the convention program.

MORNING SESSION.

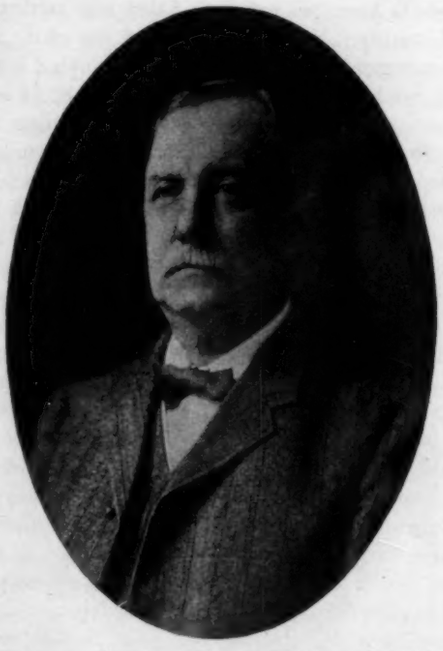
In spite of the excessive heat about 300 delegates were present Thursday morning at 10:15 o'clock when President D. Y. Cooper, who presided over the session called the convention to order and introduced the Rev. Samuel D. Hatcher, who offered the invocation.

Mayor D. C. Richardson, of Richmond, then delivered the address of welcome in his usual witty and brilliant manner. The Mayor commented upon the fact that three years ago the members of the Association came to Richmond as strangers, two years ago as acquaintances, and then he greeted them as having thrice honored that city and extended to them a welcome as friends, with bonds of friendship so welded that they would never part.

James P. Gossett, of Williamston, S. C., responded to the welcome in a brief and able manner. Mr. Gossett said in part, "We need no assurance of our welcome to your city and I hardly think you need any assurance of our acceptance and appreciation. We are not strangers; we have been here before and have partaken many times of your splendid hospitality and we expect to come again. Built upon seven hills it is a natural fortress and it has been, is, and ever will be the objective point in times of peace as well as in war. Therefore it is now fitting that such a city should be chosen as the meeting place for this Association."

THE PRESIDENT'S ADDRESS.

Then came the annual address by D. Y. Cooper, president of the Association, who cordially greeted the members



ELLISON A. SMYTH, NEWLY ELECTED PRESIDENT.

and visitors. He congratulated the Board of Governors on their happy selection of Richmond as a place of meeting and spoke briefly of the object for which the Association was formed.

President Cooper said in part: "The business situation for the past year has not been encouraging. Cotton manufacturing, in its various phases has puzzled the oldest, most skillful and most successful manufacturers. Profit and loss accounts have claimed attention and closest scrutiny. Schemes and plans have been devised for cheapening production, lessening waste and the cost of distribution. Depression in the business has been continuous for the year. Curtailment has been resorted to, but not in a general or co-operative way. Had there been a general curtailment, it would have doubtless relieved in a large measure the situation, preventing much uncertainty and loss. Manufacturers have never economized so closely, and the cost in many instances has been reduced to a minimum. There is a better understanding between buyer and seller. The evils of cancellation have been, to some extent, eliminated. Commercial integrity is getting on a higher plane.

"A cordial invitation was extended to your officers and we met with the officers of the National Association of Cotton Manufacturers in New York on October 19, 1910.

Notwithstanding the fact that both Associations have been in existence for many years, this was their first joint conference. Matters were discussed pertaining to their mutual interests in a friendly manner, exchanging views on various subjects. After a most harmonious conference, we adjourned with the understanding that a call meeting would be held in Washington, D. C., during the early part of the new year, to which the officers of the Farmers' Union would be invited. President Hobbs called the Washington conference to meet February 2, 1911. There was a full attendance from both Associations, but, for some cause, delegates from the Farmers' Union were not present, which was to be regretted.

"Ginning and baling of cotton and the question of tare elicited a lively and interesting debate. The wasteful manner in which American cotton is baled and marketed was criticised sharply. No other product of the earth, so valuable and so necessary for the comfort of mankind is handled with such careless, reckless waste. The weight of covering used is out of all proportion to that used upon similar products from other countries. This could be avoided were we to adopt the covering which is used so satisfactorily on cotton from foreign fields, and thereby eliminate a friction which so often arises between seller and buyer as to damage, lost weight, etc. In lieu of the antiquated compress systems, gin-compression should be adopted, a more advanced, economical and compact method. Gin-compressed cotton should be given the preference in price and use. They appreciate the fact that this change (of discarding the old methods and adopting the new), could not be made at once, but could be done within a reasonably short time, and would prove a great saving to growers, manufacturers and all consumers of cotton. The standard samples recently promulgated by the government were approved and recommended to the farmers, exchanges, dealers and manufacturers, and it was suggested that the same be adopted, opinions being freely expressed that the type samples were reasonably fair representations. Also that it would be desirable to have uniform samples, bales and coverings on all American cotton. I believe that for a product so important to interstate and international commerce, and entering so largely into the world's usage, standard grades and tare for each bale should be established by Federal statute.

"The subjects of buying of cotton, sales contracts, bills of lading and demurrage were all discussed, and valuable recommendations made relative thereto. Warehousing cotton in the South was considered, with the hope expressed that in the near future all cotton held in the interior would go into local warehouses so soon as baled, and that some plan might be adopted by the exchanges and others concerned, whereby the delivery of this cotton would be made to the buyer at certain ports or markets, upon mutually fair terms.

"The forest conservation bill before Congress, which was so strongly urged by both Associations as a matter of greatest importance, has since been passed. The Presidents of the National Association, the American Cotton Manufacturers' Association, and the Arkwright Club were requested to appoint two joint committees, three members from each, to be known as "The Committee on Cotton Exchanges," and "The Committee on Ginning, Baling, Buying, Tare, etc."

"To maintain our proud position as the chief cotton-growing country of the world, and to supply the requirements for American cotton, it is necessary that we increase the growth of cotton. The crop of 1910-1911 will be worth one billion of dollars. Crops of twelve and one-half to thirteen million bales annually are necessary for legitimate demands at remunerative prices to the growers. Less than this amount means manipulated markets and unsatisfactory trade conditions. The South today is in as much or more danger of losing its supremacy by short crops, abnormally high prices and manipulated markets, than it would be with larger crops at steady, fair and remunerative prices. The former will undoubtedly stimulate its growth in all countries that require cotton for manufacturing purposes. Its growth is being encouraged, by large subsidies and expenditures, in every section of the world where there is hope of its production. On the Pacific coast we are beginning to produce cotton, California alone planting eighteen thousand acres, with an estimated yield of one and one-quarter bales per acre. The American grower should not be contented to stand still and merely hold his present position among the cotton growers of the world, but should bestir himself to keep pace with increasing demands for American cotton. The growth of cotton should and can be controlled by the American farmers, and to this end the Southern farmer should be protected and encouraged to use improved methods of cultivation and to make greater efforts to grow larger and better crops. There are enough lands in the Southern states to grow sufficient cotton for the world's spindle consumption. The most desirable varieties of cotton known can be grown in larger volume, more advantageously, and with more satisfactory and economic results, than anywhere else. English and continental spinners could experiment along this line with profit, and with a saving of subsidies and heavy expense to themselves and to their governments, when compared with other similar products.

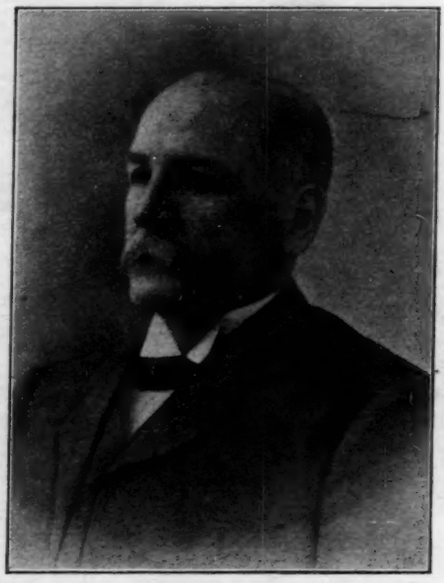
"Cotton fabrics have never been placed upon their proper basis, nor has their intrinsic value been properly appreciated. They have traditionally been regarded as the poor man's cloth. Yet "no nation and no people has ever reached such a point of civilization or such a stage of development as to have outgrown the use of cotton products." With the immense yearly increased distribution of cotton goods there are millions of people in the world yet unclothed. To meet additional demands, as you will be called upon to do as civilization advances, the enlargement of the cotton fields of the South, and improvement of facilities for the manufacture of cotton, will become necessary and imperative. No section of our great country offers more opportunities for development or greater advantages for investment. It is desirable that our foreign trade be more extensive, entering into new fields, and asking for a reasonable share of their valuable trade. Sharp competition, established traditions, trade conditions—low cost of mill equipment and production—and skilled labor are all to be encountered and must be overcome. We must so fortify our position as to be able to prove to our customers that it will be to their advantage to trade with us, and to that end, only trained agents should be sent to solicit and establish this business, which should be built upon such confidence that it cannot be weakened or overthrown by the strongest competition.

"Our Federal and State Agricultural Departments have been very active and successful in securing all data and information possible relative to the number of acres planted, the growth in the fields, and harvesting the crop. The departments have been at considerable expense, both in time and money, investigating conditions and everything pertaining to cotton and its culture. The departments of the various States have been no less energetic. These investigations are encouraging growers to improve their methods in cultivation, which will be reflected in increased yields and better crops. These reports, taken in connection with those made by individuals and firms, when aggregated, usually give a fairly accurate estimate of the crop grown. The cotton crop is of such immense value, of so much importance, and so far-reaching in its beneficent influences, not only to American commerce but to the commerce of the world, that these reports and estimates, upon which so much depends, should be made as carefully and accurately as possible. The government, with its active agents and corps of experienced specialists, has spared no pains nor expense to meet requirements in this respect. Their reports have reached that stage in the confidence of the commercial and manufacturing world that they are no longer classed as doubtful. The various countries of the world are being visited and investigated by government experts to find markets for our finished products.

"The American manufacturer has been contented with the domestic trade, and has done little to encourage a foreign demand for his product. This trade, until 1908, yielded reasonable profits, with comparatively easy competition, cheaper cost of production, and less expensive methods of merchandising. Now that the supply exceeds the demand, it behooves the manufacturer to look in other directions for new fields and methods for the distribution of his goods. We are impatiently knocking at the doors of the foreign merchant, seeking trade that is of slow growth, the essential features being friendship, absolute confidence, and longer credits than the American manufacturer is accustomed to give. In fact, the American manufacturer is averse to giving long credit, slow to change his mode of business, or construction of his goods, to meet the requirements of the foreign merchants. The Bureaus of Manufacturing and Agriculture are making strenuous efforts and spending large sums to secure as much of the foreign business for the textile manufacturer as possible. Are we giving them our enthusiastic support? We appreciate also the aid of the Pan-American Union, in their endeavor to secure a liberal share of the South American trade. These combined efforts will benefit the American manufacturer in proportion to the amount of goods marketed abroad, eliminating much of the competition on our home markets. Larger and better markets for the products of the American agriculturalists and manufacturers are to be desired, encouraged, and must be secured.

"The textile and commercial press have repeatedly warned the cotton manufacturers of the enormous increase of new spindles and the consequent evils of over-production. From time to time, they have covered comparatively the whole field of cotton milling activities, collating and distributing a mass of valuable information. There have been more articles of real merit, bearing on this subject, written during the year than ever before. The information gleaned from their columns has been invaluable to both grower and manufacturer. The market journals have given daily full reports of conditions and prices of goods in domestic and foreign markets. The manufacturer of today, by reading the textile and commercial journals, can keep in close touch with the rapid changes and methods that are going on in this vast business. It is with pleasure that we express to them our appreciation for their kindly interest.

"The Panama Canal will likely be completed and opened within the next four years. It behooves the American agriculturalists and manufacturers to place themselves in position to take advantage of the boundless opportunities that will then be offered them. Additional transportation lines will doubtless be inaugurated, bringing closer to our doors the great and increasing markets of the Pacific coast, the west coast of Central America and the Far East. These markets are constantly increasing in importance and magnitude, and will make most desirable and valuable customers. The completion of the canal means immense opportunities for development of the Southern states, and of the agricultural, manufacturing and mining interests of the whole country.

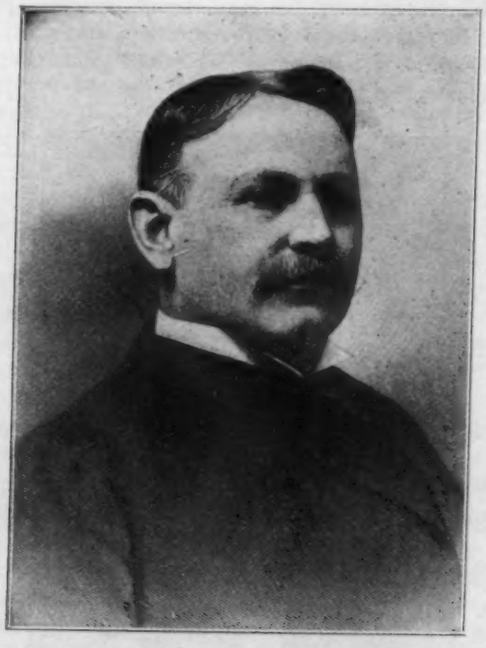


D. Y. COOPER.

"The past few years there has been continuous discussion and some unfortunate friction between the cotton growers, manufacturers and representatives of the exchanges relative to the methods of the cotton exchanges, and more or less bitterness has been injected at times. It would be to their mutual interest if the exchanges themselves could revise without further delay their laws and methods, so as to encourage the co-operation of the manufacturers and producers. I am pleased to think that these discussions will result in a mutual understanding, which will be alike harmonious and beneficial to all concerned. With this end in view, and that we may have a clearer insight into the methods of the exchanges, we have invited a prominent representative of the New York Cotton Exchange to address this convention. I am sure that this address will be instructive, entertaining and of value.

"I congratulate the Association upon the splendid progress that has been made during the year along educational lines and welfare work among the mills represented in this

Association. Many satisfactory and salutary labor laws have been enacted and modified in various States, being alike fair to owners and operatives. The health and morals of the operatives have been of special consideration. Schools and churches have been established. Sanitary conditions of mills and tenement homes have been improved and made more comfortable and attractive, hence it is the exception where we do not find the most kindly and friendly feelings existing between the employer and employes, the one striving to aid, encourage and benefit the other. As evidence of this kindly relation, during the long "rest cure" and depression in the cotton mill business, every effort has been made to provide for the comfort and welfare of employes and their families, and this in many instances at heavy loss and expense to the companies. These efforts have been appreciated. Our employes needed aid and the companies supplied them. True, the agitator at times



W. A. ERWIN, NEWLY ELECTED VICE-PRESIDENT.

has been around during the meetings of various State Legislatures, but they have been conspicuous by their absence when help is needed or charity is to be dispensed."

At the close of President Cooper's address, W. A. Erwin, chairman of the Board of Governors, stepped forward on the rostrum and delivered a happy presentation speech, in which he thanked President Cooper for the able manner in which he had directed the Association during his term of office and for the great work he had accomplished during that period. At the close of his speech he presented President Cooper in behalf of the Association with the president's gold medal awarded by the Association to each president at the close of his term of service. President Cooper responded with a few well chosen words.

The secretary then announced the appointment of the following committees to report on Friday:

Resolutions—R. M. Miller, Jr., Arthur H. Lowe, J. D. Hammett, C. D. Tuller, and Scott Maxwell.

Nominations—J. S. Pleasants, J. C. Plonk and J. L. Patterson.

At the request of President Cooper, President Hobbs, of the National Association, made a short impromptu address in which he said that for the accomplishment of mutual benefits, he appreciated the fact that the two Associations were being drawn together and that he wanted to see perfect harmony and co-operation between the body he represented and the organization then in convention.

TO INCREASE CHINESE TRADE.

At the conclusion of President Hobb's address, Rev. Dr. Gilbert Reid, director of the International Institute of China, read his paper entitled "Suggestions as to the Increase of Our Piece Goods Trade in China."

"It is first important," said Dr. Reid, "that we realize the increased competition that prevails in all branches of business in the Empire of China. Originally, there were two chief competitors in both the import and export trade of China, the British merchant and the American merchant. Today besides the growing competition between the business men of these two countries, there exists competition with the Germans, the Japanese, the French, the Russians, and in fact nearly all the countries of Europe.

"A second feature in the general condition of commercial interests in China, is that the success in the face of widened competition can be secured only by a larger development of China's resources, by an increased exportation of China's commodities, by increased wealth on the part of the Chinese people and increased prosperity on the part of the whole nation. Our import trade into China will grow in proportion to the advancement which is made by the Chinese nation. Anything that we can do to assist in the development and prosperity of China, will have its direct bearings on the increase of our own trade with that country, and on the larger introduction of American commodities of all kinds into all parts of that vast Empire.

"Therefore, there arises the third condition of increased trade with China, and that is, the importance of American commercial men exhibiting a larger degree of generosity in their attitude to China. The altruistic side of commerce is the side which will impress the Chinese mind, win their favor, and secure an open door for our business enterprises. Our competitors, the German merchants, have already grasped this idea. In fact, the whole policy of the German Government has altered within the last few years. Formerly, we were all impressed with the methods of force, with the mailed fist idea, which characterized the German Government in its treatment of China. Lately, they have reversed these methods and adopted a policy of conciliation, adaptation, friendliness and generosity.

"A fourth aspect of the general situation in China, illustrating the changed conditions which have taken place of late years, is the necessity of adopting co-operation, if our business relations with China are to improve. Such co-operation is the outcome of the spirit of generosity. Today the concessionaire is not as welcome as the advocate of friendly co-operation, wherein foreign capital and Chinese capital, foreign experience and Chinese experience, foreign enterprise and Chinese enterprise, may be combined. This means the formation of joint stock companies, and in a lesser degree, in some kind of friendly agreement whereby both the Chinese and foreigners may be benefitted. The principle needs to be recognized in all attempts at introducing American goods into China, especially our American piece goods."

"Now as to the particular aspects of our piece goods trade with China, especially as conducted by the cotton manufacturers of our Southern states. The first suggestion is concerning the packing of our goods. Caution must be taken in the packing of goods, if they are intended for the far-away interior cities of China. It is one thing for Japan to send her goods across the Japan Sea into Manchuria, and another thing for our manufacturers to send their goods from our Southern states to the Atlantic coast, and then around the Cape, or, later, through the Panama to the ports of China, to be trans-shipped by river steamers or canal boats or coasting steamers to other trade centers, and then transported by carts, wheelbarrows, or pack-animals hundreds or thousands of miles to the large communities of inland China.

"A second suggestion is concerning the quality of our piece goods. As a rule the quality of our goods ranks as high as the quality of goods offered by the manufacturers in other countries. I would not urge that we cease to produce a high-grade class of goods; but that we also produce a lower grade class of goods, such as may be purchased by the vast majority of the Chinese people. Our best goods will be purchased by the wealthy Chinese. Cheaper goods of a coarser grade will be purchased by the ordinary Chinese, in the present undeveloped condition of the country.

"The third suggestion is that we seek to adapt our goods to the tastes and necessities of the Chinese. The size of the goods, the pattern and color, the particular trade-mark, all need to be considered. It may be that some new sample, with an attractive kind of trade-mark, may hereafter be introduced into China, which will become more popular than anything which we have thus far placed on the market. Competent Chinese, working in co-operation with our representatives, will be able to offer suggestions, which experts on the ground should be ready to utilize.

"The fourth suggestion is that our piece goods trade with China be conducted on a large scale, and by a strong combination. The two most successful branches of American trade in China have been conducted by two great corporations, the Standard Oil Company, and the British and American Tobacco Company. Competition can be met not necessarily by a monopoly, but by combination. The China and Japan Trading Company is recognized as one of our big American firms in the City of Shanghai and is a large investor in American piece goods. Should it be possible to make a similar impression on other parts of China, there is no doubt that trade in this line of goods would be rapidly promoted.

"My fifth suggestion, which I regard as most important, is that we adopt the method of direct agencies. One method is for our manufacturers to send their goods to certain business houses in New York, who in turn will sell their goods to firms engaged in China trade, who on their part will undertake to ship the goods to Shanghai and by negotiation with the Chinese go-between or compradore sell the goods to Chinese firms doing business in piece goods, who in turn will take the goods thus purchased and sell them to agents of Chinese firms from other cities, and who finally will sell the goods direct to the Chinese people. Another method is for our cotton manufacturers to send their goods direct to their own headquarters in Shanghai or any other important treaty port in China, and then by a large, well-trained staff of American agents and Chinese agents undertake to sell their goods directly to the people in all parts of China. The American agents could reside at any of the treaty ports and could travel as supervising agents through all of the provinces of China. On the principle of co-operation, first-class Chinese shops in the different cities might be induced to act as agents for our goods thus brought to their attention by our own agents, versed in the Chinese language and familiar with Chinese customs, or by trustworthy Chinese agents who will seek with enthusiasm to find the very best of their own countrymen to join forces with a well-known and aggressive American company. I am confident that the direct method would mean success in the introduction into China of the piece goods manufactured in our Southern mills."

Howard Ayres, of New York, entered into the discussion that followed the reading of this paper and supported the present system of selling goods in China.

At the close of Mr. Ayres' discussion the secretary announced that because of the absence of Mr. Jennings, who was to deliver the address on the Price-Campbell cotton picker, Mr. Price himself would address the delegates which he did briefly and ended by inviting everyone to attend the demonstration of the cotton picker in a nearby vacant lot. The meeting then adjourned to have a photograph made of the delegates and to inspect the cotton picking machine in operation.

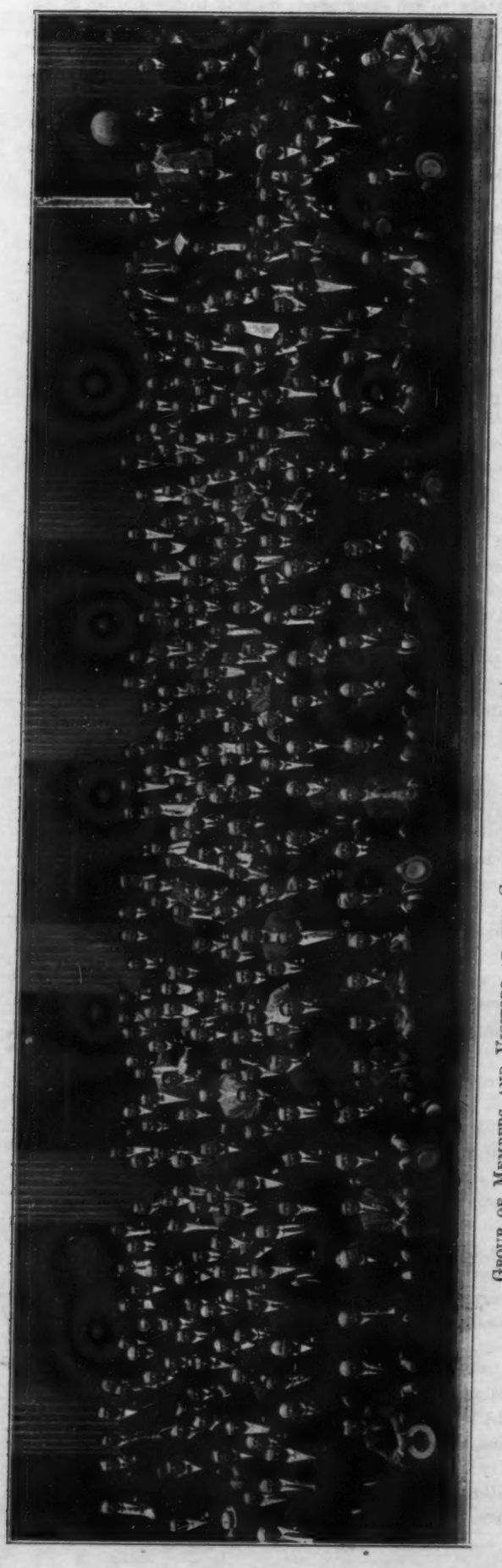
AFTERNOON SESSION.

Promptly at 2:30 p. m., President Cooper called the meeting to order and introduced Harrington Emmerson, of Boston, Mass., who delivered his address on "Efficiency and Scientific Management."

"What," asked Mr. Emerson, "is the trouble with American cotton mills? The same trouble that exists with nearly every other American industry. It is over-equipped and under-developed. It has been so busy marketing natural products in semi-manufactured form that the refinements of manufacture have been neglected.

"Steel billets are exported to England, only to a small extent iron and steel products; lumber is exported, not furniture; cotton is exported, not cloth; food products are exported, not the brain and skilled handwork of men whom this food might have fed. Recently I went at an interval of a week into two textile mills, one North, one South. The latter was owned and controlled by Americans of the highest type. They had built a monumental mill, equipped it with the best modern machinery and with operators, all native Americans, everybody with highest skill and intelligence, but it was running at a loss. They had gone at the problem from a main-strength point of view. The product was unbleached cotton cloth of coarse texture and even as to this they worked to specialize on one grade so as to eliminate any need for thought, imagination or enthusiasm. The raw cotton had cost about fourteen cents. The labor cost was scarcely more than one-third of the material cost, and power was at less cost than I have ever known steam power to be provided.

"The other mill was in the country, twelve miles from the railroad station, a cheap barn of a structure, owned and operated by foreigners from a remote corner of Europe. They paid seven to ten cents for their material, had very great technical difficulties of manufacture to contend with, but they sold their product at a dollar a pound and were behind with their orders. They were not over-



GROUP OF MEMBERS AND VISITORS AT THE CONVENTION OF THE AMERICAN COTTON MANUFACTURERS' ASSOCIATION.

equipped, they were not converting an abundant native product into a semi-finished sheeting by perfected machinery and sundry operations. They were making a foreign product, spinning it in an under-equipped mill with unperfected machinery and a few foreign operators. The Americans used money, the foreigners used brains.

"During the next few years in other branches of business besides cotton we shall hear of over-production. American mills today, steel, lumber, cotton, paper, railroads have equipments sufficient for twice the business. There are just two remedies possible: (1) To grow to the capacity of the equipment; (2) To become one of the efficient survivors.

"It would take a generation to grow up to the capacity of equipment, so this offers no consolation. The other method will act automatically. There is going to be a squeezing-out process, and while efficiency may not save every unfortunate plant, it is by far the biggest element in sight in eliminating those losses, which make the difference between a credit and a debit balance.

"Efficiency does not consist of any particular stunt or device; it consists in so organizing as to (1) Make available all the knowledge in the universe that may be available for each minute item of manufacture. (2) Ascertaining exactly what present conditions are. (3) Setting up ideals that ought to be attained. (4) Everlastingly applying the principles of efficiency until the ideals are attained.

"Common sense is the foundation for all the principles of efficiency. Any criticism of scientific management which is itself not based on common sense is discredited, any lack of common sense in any plan of scientific management is necessarily to be blamed, since every one of the principles must be applied with common sense."

Mr. Emmerson's paper aroused considerable discussion in which Mr. Lowe, Mr. Parker, Mr. Hobbs of Boston and others took part. In the absence of Mr. Law, chairman of the committee on Excess, Tare and Cotton Warehousing, the report was read by Mr. Bryant, secretary of the Association. The report of the Bill of Lading committee was also read and both committees continued.

WHAT IS A COTTON EXCHANGE.

The next paper to be read was "What is a Cotton Exchange?" by Arthur R. Marsh, president of the New York Cotton Exchange, of New York. Mr. Marsh spoke in part as follows:

"The three great cotton exchanges of the world, known from the cities of their location as the Liverpool, New York and New Orleans exchanges, have all been in existence about forty years. Few persons now concerned with cotton can even remember when they did not exist, or can imagine what the cotton business was like before their inauguration.

"Multitudes of persons who never visited any one of the exchanges know intimately of their operations. The success or failure of their own lives is bound up with what goes on in the exchanges. They produce cotton, or merchandise it, or speculate it, or spin it, or buy and sell the goods made from it, relying for guidance upon what they learn from the reports of the business done on the exchange. To enable them all to know quickly and surely what the exchanges indicate about cotton, a marvelously complex and complete system of world-wide communication has been elaborated. As all roads led to Rome, so all the

sensory nerves of the cotton trade lead to the cotton exchanges, and then out again through the whole vast economic body of cotton in all its forms.

"My present purpose is to discuss briefly, with a view to defining, or, to use a scientific phrase, differentiating the idea of a cottton exchange from other more or less similar conceptions which are currently confused with it and which disturb the proper understanding of what cotton exchanges can or cannot properly undertake to do in the commercial world.

"The cotton exchange which I have in mind is a great market for cotton, both on the spot and for future delivery; and, above all, it is a cotton market in which the by-laws and rules have been so adjusted, on the one hand, to all the varieties of cotton which nature affords, and, on the other, to all the multifarious requirements of the cotton trade, that it has been made possible for the trade generally to enter safely and understandingly into the vast complex mass of credit transactions which are called for in the course of the prolonged and hazardous task of distributing to ultimate users all over the world the gross and unassorted product of millions of cotton producers, great and small, scattered over millions of square miles of cotton-producing territory.

"What, then, are some of the characteristics of such a cotton exchange, or cotton market, as I have described? The first and most important is that it is an association of cotton merchants, of men whose economic function in the world is the distribution of cotton, as nature gives it to us, from the producers to the various users of it in accordance with the several needs of the latter. It is upon this class of cotton merchants that the world at present reposes the responsibility for providing the ways and means by which every cotton producer can always find an instant market for his crop, no matter what its character may be, and by which the user of cotton, wherever he may be, can always be provided with the particular kind of cotton he requires, at any time and at any place that he may require it. A cotton exchange, then, has as its central idea the complete adaptation of the business transacter in it to the commercial needs of cotton merchants as a class. Its by-laws and rules must be framed with a view to the needs of cotton merchants, and of no other class of persons. Merchandizing cotton, and no other functions, is what these by-laws should be designed to facilitate.

"Various classes of persons who have an interest in cotton, but not the interest of cotton merchants, have appeared, asserting that the old by-laws and rules are unjust and iniquitous, and ought to be changed in a sense more favorable to the interests of these critics. Thus we have had cotton spinners vehemently asserting that they have rights in the case paramount to those of everybody else; that the cotton exchanges have no right to exist unless they make the immediate needs of the spinners the first subject of consideration; and that by-laws and rules which compel spinners making direct use of the exchanges to become general merchandisers of raw cotton, impose an intolerable burden upon them. Again, speculators in cotton, whose sole object in having anything to do with it is to make money through advances or declines in the price, and who desire to avoid as far as possible all the responsibilities of merchants, find that under the operation of the by-laws and rules of the exchanges they are compelled directly or indirectly to assume some of these responsibilities.

"And, finally, cotton producers, not so much of their own motion, as impelled by the general outcry of spinners and speculators that things are wrong, take the field with the contention that, if cotton exchanges are to exist at all, it should be for the purpose of keeping as high as possible the price of cotton, and that the by-laws and rules should be so amended as to work always in favor of those persons, chiefly speculators, who are endeavoring to do this. Thus all these classes of persons, whose interest in cotton is certainly very direct and vital, but yet not the interest of cotton merchants, strive to pull or force the cotton exchanges away from the primary principle of their being, *i. e.*, that they are associations of cotton merchants, organized by cotton merchants for cotton merchants; and to compel them to adopt some other primary principle which shall dominate all their by-laws and rules according to the supposed needs of these other persons.

"Let us take first the contentions of the spinners with regard to the impropriety of the existing rules and methods of the exchanges, and particularly of the New York Cotton Exchange. As I make out from the published utterances of various spinners and from communications from individual spinners or associations of spinners addressed to the New York Cotton Exchange, there are three chief grounds of complaint. The first is that the contract for the future delivery of cotton is not framed in such a way that the average spinner can buy it with the assurance that, if he desires the actual delivery of the cotton, he will receive exactly that character of cotton which he finds it most advantageous to use in his mill. The second complaint is that the operation of the by-laws and rules governing deliveries on contracts is such that, though the contract is specifically called a "basis middling" contract, the price of contracts at times varies more or less widely from the price of actual middling cotton, thus introducing an element of uncertainty into the business operations of the spinner, to whom and to whose customers the current price of middling cotton is the market price of cotton as a commodity. The third complaint is that unrestrained speculative operations are permitted on the exchanges, and that violent and incalculable fluctuations in the price of cotton result therefrom, making it difficult for the spinner to forecast with certainty the most important single element in his business, the price of his raw material.

"Let us examine *seriatim* these complaints of the spinner in the light of the definition of a cotton exchange as primarily an association of cotton merchants, with by-laws and rules designed to facilitate merchandising cotton as nature produces it, and nothing else. To begin with, the spinner declares that it is unjust to him that when he wishes to use the cotton exchanges directly, and not through the mediation of the cotton merchant, he should be compelled by the by-laws and rules to take delivery of all kinds of cotton on his contracts instead of getting just the kind he finds it most advantageous to spin. Here a moment's consideration will show that there is a fundamental difference between the position of the spinner and that of the coton merchant. Indeed, this difference is such that the two positions are economically irreconcilable. It is the business and the duty of the cotton merchant to merchan-

dise any and every kind of cotton that is produced. He cannot pick and choose. He cannot leave in the hands of the producer those kinds of cotton which are less advantageous to the spinner, confining his purchases to the kinds for which there is an instant and universal demand. The producer would not tolerate such a procedure, even if the merchant desired to follow it.

"In the normal course of his business the merchant must acquire great quantities of cotton which are slow and difficult of sale, and the distribution of which must be extended over considerable periods of time. All his trading as a merchant must be governed by this fact, and any arrangement of the rules controlling his trading which fails to take cognizance of this fact is from his point of view fatally defective. It is economically impossible for him to trade on the one side with producers who insist on selling him all the cotton they raise, or none; and, on the other, with buyers of contracts for cotton in gross, who can compel him to deliver to them only the immediately desirable portion of his purchases. Knowing as he does that ultimately all kinds of cotton will be needed and will be sold, he sees no reason for providing a certain class of buyers of cotton with advantages which he himself does not enjoy. As a merchant he cannot in reason be expected to do any such thing. If, then, cotton exchanges are primarily associations of cotton merchants, the contention of spinners on this point falls to the ground by reason of its economic impossibility.

"We come now to the complaint that the occasional variation of the price of the 'basis middling' contract upon the exchanges from the current price of middling cotton produces unfortunate results in the spinner's business, and that the exchanges are at fault in their rules, if those rules make the variation possible. This complaint the spinner is apt to emphasize by saying that it is the custom of the cotton goods trade to base the price of contracts for goods upon the quotations of the exchanges for contracts for cotton; and that when the price of the latter falls away from that of middling, he labors under great and unjust disadvantages. Perhaps also he adds that when he has 'hedged' a contract for goods calling for the use of middling cotton or better by purchasing cotton contracts on the exchanges, it is not right that he should find the parity between the price of the cotton he needs and the cotton contracts he has bought disturbed to his loss. This last allegation need not be taken too seriously; for it was always possible for the spinner to 'hedge' his goods contract by means of a contract made with some cotton merchant for specific grades of cotton.

"Neither is it easy to understand how there can be just cause for complaint, if the spinner has based his own operations in goods upon the happenings in a collateral market, which he is not in a position to understand thoroughly, even if that collateral market is as closely allied to his own as the cotton futures market to the market for goods. But above and beyond these lesser answers to the spinner's contentions is the fact that the cotton exchanges, through their future contracts, are markets for cotton in gross, just as it is produced and sold by the producer, and not markets for cotton sorted out and made immediately available for the varying requirements of individual spinners. They are great reservoirs into which through 'hedge' sales for future delivery the great flood of all kinds of cotton is poured, to be drawn out by the merchants who use them according as the varying requirements of their business demand.

"The fact that the exchange contract is known as a 'basis middling' contract means to the cotton merchant nothing more than that middling cotton is to be taken as the starting point in calculating the value of any given lot of cotton, when it changes hands in the market. It certainly does not mean that the price of contracts is or ought to be the current price for middling cotton. The cotton merchant understands perfectly that conditions may arise and constantly do arise that give to this or that grade of cotton a particular and unusual value, and that this may be true of middling as well as of any other grade. When this occurs, it is certain that the current price of middling will increase as compared with the price of cotton in gross, and there is nothing uneconomic or contrary to just principles of trade in its doing so.

"With regard to the last complaint of the spinners, that excesses of speculation are permitted on the exchanges, which seriously and unwarrantably disturb the conduct of their business, there is, in my opinion, as things are today, much more to be said in its justification. Ordinary speculation all economists are agreed can work no real injustice to anybody, because, to be successful, it must be founded upon sound judgment of the true underlying conditions; and it is to everybody's ultimate advantage to have these conditions made effective in the market for any commodity as quickly as possible. On the other hand, ordinary speculation based upon a wrong interpretation of conditions always fails, and produces no permanent effect upon the market. But I do not think it can be denied that in recent years there has been a form of speculation in cotton which differs radically from ordinary competitive speculation and has produced disturbing effects that may be rightfully objected to.

"This speculation to which I refer is based not upon obtaining a part of the profit of the readjustment of the commodity to new conditions of demand and supply, but upon taking violent advantage of the technical procedure of merchants in the exchanges in the matter of 'hedges,' forcing arbitrary settlements from these unfortunate merchants on their 'hedge' contracts, irrespective of the general economic conditions. We had a good illustration of this obnoxious form of speculation in the New York Cotton Exchange last summer, when speculators acquired such vast quantities of 'hedge' contracts that they were enabled to force setlements on a considerable part of them at prices which can only be called extortionate in view of the fact that these same speculators were freely selling actual cotton that had been delivered to them, at four or five cents a pound less than they exacted for the settlement of the contracts. I do not think any right thinking man can apply to such operations any other terms than uncommercial and even immoral. It goes without saying that they are regarded with abhorrence by the reputable cotton merchants who form the bulk of the membership of the exchanges.

"Having now discussed, in the light of the definition of a cotton exchange as primarily an association of cotton merchants, the criticisms of cotton spinners, and having endeavored to show briefly that these criticisms, except for that regarding undue speculation, are lacking in validity, if the exact idea of what a cotton exchange really is remains

true, I shall speak much more briefly of the common complaints indulged in by speculators and cotton producers about the exchanges. With regard to the speculators, I am inclined to give them rather short shift, for if there is any one primary obligation of the speculator, when he extends his activities into any branch of commerce, it is to take conditions as he finds them, and run his chances with the rules as they are.

"And now, finally, a few words about the contention of the cotton producers that the cotton exchanges are failing in their duty to them, unless they facilitate the operations of those who are striving to enhance the price of cotton. This contention, as I have indicated above, seems to me rather an echo of the complaints of spinners and speculators than something originally conceived by the producers themselves. But, whatever its nature, it has undoubtedly played a considerable part in the recent agitation against the exchanges. The one brief, and, at the same time, economically sound answer to this complaint is that the supreme duty of cotton exchanges is to facilitate the merchandising of all the cotton which the producer has for sale. Advances and declines in the price are not their proper concern. The most dangerous merchant is one whose business is based upon advances or declines in the price of the commodity he handles. Nobody knows better than the cotton merchants who compose the exchanges, that they do not fix the price of cotton; that they would be helpless, if they attempted to do so; and that they have only one proper concern, *i. e.*, buying and selling cotton with a reasonable compensation to themselves for their capital and their brains, at such prices as the law of supply and demand may determine. To ask more of them than this is to ask them to introduce an element of corruption into the entire business. They will never consent to do more than this so long as they remain reputable merchants.

"To sum it all up, in the words often used before, cotton exchanges are properly institutions organized by cotton merchants to facilitate the merchandising of cotton. They have no other reason for existence. Their by-laws and rules should be absolutely dominated by this idea and by no other. The one imperative duty they have is to provide for the distribution of the entire cotton crop as nature gives it to us. Any departure from their duty, for the sake of meeting the particular needs or wishes of spinners or speculators or cotton producers, is but a denial of the first principles of their being."

REPORT OF COMMITTEE ON EXCHANGES.

At the close of the address by Mr. Marsh, Lewis W. Parker sugggested that discussion on same be deferrred until he read his report as chairman of the joint committee on cotton exchanges. This was acceeded to and Mr. Parker proceeded to the rostrum and read the report, a part of which folllows:

"Committees from this Association have earnestly presented to the cotton exchanges such changes in rules as they believe would have the effect of preventing manipulation and of preventing a misleading quotation of price.

"It is equally unfortunate to the manufacturer for prices to be unduly low upon the exchange as it is for them to be unduly high, for in either case the price so reflected is the result of manipulation. What the manufacturer demands, and what he has a right to demand, is that the price on the exchanges shall be truly reflective of the price of spot cotton. By no means has this price been so reflective on at least some of the exchanges during the recent past seasons.

"Manufacturers' Associations should have no fight against cotton exchanges if those exchanges truly reflect conditions of spot cotton. On the contrary, an exchange if legitimately managed and regulated, and if the prices ruling thereon are truly representative of spot values, is and should be of decided advantage to cotton manufacturers, as also to producers; but if, on the contrary, the prices reflected on the exchange are merely the result of speculation for or against the value of the commodity, or if those prices are only reflective of the speculative actions of one element as against another element, then the exchange becomes a serious disadvantage to the manufacturers and to producers, and ceases to be a legitimate body.

"Of course, the two principal exchanges in the United States are the New Orleans and New York cotton exchanges. Under the rules of the New Orleans exchange, the prices ruling thereon are in much closer relation to the prices of spot cotton than as a rule are the prices of contracts on the New York cotton exchange. The members of the New Orleans cotton exchange have shown a much greater willingness to conform to the suggestions of manufacturers and producers, in order to make their quotations reflective of spot conditions, than have the members of the New York cotton exchange. Of course, the operations on the New York exchange are many times greater than they are upon the New Orleans exchange, and therefore the unfortunate effects of mis-quotations on the New York exchange are many times what they would be upon the New Orleans exchange. Apparently members of the New York cotton exchange have been more impressed with the necessity of so preserving their rules as to make them advantageous to speculators and to manipulators than they have been to make them of such character as to be advantageous to the operations of the manufacturers and producers.

"By reason of the rules of the New York cotton exchange it is seldom that the prices of contracts on that exchange are in a parity with spot cotton, or truly represent the prices of spot cotton in the community of production, plus the carrying charge to market. At times, the prices of contracts are much above the prices of spot cotton. At other times, they are much below. For instance, during last November and December, the prices ruling upon the New York cotton exchange were considerably in excess of the prices of spot cotton in the South. In portions of January and February the prices on the New York cotton exchange were much below those existing in the South and practically from that date to the present, this disparity has continued to exist. The result is that in November and December an undue quantity of cotton was attracted by the high prices on the New York exchange to that market, and this cotton when so received was simply used as a club with which to depress unduly the prices during subsequent months.

"The experience of the present season is not different from what it was the season before and, in fact, in every year for the last five or six years there has been on the New York cotton exchange a constant disparity between prices of spot cotton and contract quotations. We were told in the season of 1906-07 that this was an unusual

condition, brought about by the unusual quantity of low grades; yet this same disparity existed in the succeeding year, which was not a low grade crop, and it has continued to exist at one time or another of the season during each year.

"Your committee therefore recommends that they be continued and that this Association once more expresses its earnest hope that the cotton exchanges, and particularly the New York cotton exchange, will rectify their rules so as to make a true and proper relation between contract prices and spot cotton; that if these rules be not so properly regulated as to make this relation, that your committee be authorized in the name of the Association to present such memorials to the legislative bodies as may lead to a proper regulation by them of the cotton exchange. It is a most unfortunate condition when extreme speculation regulates the price of such a commodity as cotton, upon which the fortunes and living conditions of so many thousands of producers and employees are dependent."

THE DISCUSSION.

In the discussion which followed, Mr. Parker said he appreciated the frankness of President Marsh. He had been told that it was a part of his business to use the New York cotton exchange, and had learned from Mr. Marsh for the first time that manufacturers were not expected to use it, and were interlopers when they did trade there. Mr. Parker said he had also thought that the producer of cotton had

LEWIS W. PARKER.

something to say as to the price of his product, and he had learned from Mr. Marsh that he also was an interloper.

"The planter's very life and existence is locked up in the price of his product," said Mr. Parker. "Yet Mr. Marsh says he has nothing to do with the rules of the exchange or with cotton futures. It is a sound principle of law and sense that a man must use his property so as not to interfere with others. If the exchange is only for merchants, those men are bound in all morality to so manage it that they shall not destroy the value to the producer nor the business of the manufacturer. We have an interest in the exchanges if they are destroying our business, and a right to be heard as to those rules, so that the price of cotton on exchange shall properly reflect the price of spot cotton. I glory that the Southern planter has reached independence and can hold his crop for fair prices and put it on the market only as the spinners demand it. It is not moral for the exchange to say to the producer that his cotton is worth less than it would be were it not for the exchange."

Mr. Parker told of instances in his knowledge where prices had been manipulated, forced to a high pitch and then sold down, regardless of the ordinary laws of supply and demand. Mr. Marsh in reply, asserted positively that Mr. Parker was wrong; that he was in a position to know what went on on the exchange, and he did not think the manipulation described had happened; that Mr. Parker's statement was "inexact." Rising, Mr. Parker demanded to know whether the price of December cotton had not been as he had stated.

"It is a fact," admitted President Marsh. Mr. Parker pressed his advantage, making Mr. Marsh admit to have been a fact each statement Mr. Parker had made as to price changes on certain dates. Mr. Parker asserted vehemently that he had made no statement of fact but what was admitted by the president of the exchange; and had a right to draw inferences from those facts as to the manipulation going on behind the scenes.

"I object to that statement," cried Mr. Marsh, starting forward angrily. He was checked by President Cooper with assurances that he would have the right to reply later. Mr. Parker continued his argument of the causes leading to the violent fluctuations in prices, saying that he would leave it to any member to say whether it was not a fact that when there was not enough cotton to go around, the exchange had said to Southern producers that their product was worth only 13 cents when it was bringing 15½ cents. Mr. Parker apologized for any seeming irritation on his part asserting that it was but the earnestness of his belief that the New York exchange as operated today is most injurious to the whole cotton industry. He gave accounts of his personal experiences on the New York cotton exchange, asserting that small as he was in comparison with the great volume of the trade, he could have broken a half dozen merchants had he demanded delivery of the cotton he had bought in good faith, but who had been caught by market manipulation. Instead, he said, he had bought from the producer at spot price, until the merchants who had sold for future delivery could get out on their hedges and deliver.

"It is just a case of swing one way, and then swing the other," he asserted. "We saved the merchants by our consideration. We knew the manipulators would put the market down and let us spinners sweat. Futures went down, but they said there was no relation whatever between spot and futures, and proceeded to underbid the producer. It is evident the exchange is for the merchant, and not for the producer or the spinner. The New Orleans exchange has shown a disposition to meet us and alter rules so that spot and future quotations will have a true relation. What we demand from the New York Exchange is that there be a parity between spot and future quotations.

"I say, and I challenge Mr. Marsh to deny it, that there isn't a rule on the New York exchange that isn't in favor of the seller. We are told that it is a gross immorality and violation of decency, and go on the exhange and buy

up cotton and expect delivery, but these people claim that it is nothing but good mercantile practice to sell us what they haven't got, and when we ask for delivery of what we have purchased they cry to the courts and to the government for relief. I bought 5,000 bales last year and was immoral enough to ask them to deliver what they had sold me, and was told that there was such great manipulation going on that we must put up the cash, without knowing what grade of cotton we would get. We put up the money—poor little simpletons—and waited for our cotton. We finally got certificates in August for small lots of cotton scattered all over New York harbor. Now we are told that it was a gross immorality to accept the word of a merchant who told me he would deliver me actual cotton on a certain date. A year ago Mr. Marsh took the other side. It would appear that somebody had been selling cotton he didn't expect to deliver, when in August cotton went up to 20 cents because somebody had sold cotton he couldn't find.

"The very life work of the producers and manufacturers is being ruined by the manipulation of the exchanges. It should be published to the world that the price quoted by the New York exchange does not represent the price of cotton, but only a fictitious quotation put on a paper transaction by these merchants. Manufacturing is ceasing to be a legitimate business, where efficiency counts, but a study of how to get spot cotton a little lower than somebody else. Some inefficient man who buys on a pure guess at the end of the year proves to be the successful manufacturer. If we were presumptuous in asking them to deliver what they sell, then in all sincerity and honesty, after having exhausted every other method, we must go to the representatives of our people, who are alike the representatives of producers and consumers, and demand legal redress. But I don't despair. We should forgive them, for they know not what they do."

Mr. Marsh replied briefly to Mr. Parker, asserting that there were matters in which the most careful and exact statement of fact should be observed by everybody—that it was a question of science—of what people ought to do to be right, and that it could not be discussed from the point of what would be generally liked, or approved of. He charged Mr. Parker again with being "inexact" in quotations from his address. "I said it was immoral to buy contracts from merchants who were hedging all over the world, and then make those merchants pay high prices to get out on their contracts, when purchasers were themselves selling at the market price. I have no objection to anyone buying on a contract and then calling for the cotton. I don't call that immoral. But it is immoral to buy contracts and then sell cotton at lower prices."

"Do you regard it as immoral," questioned Mr. Parker, "for a man to sell cotton he hasn't got, and doesn't expect to get?"

"I should certainly consider it immoral," answered Mr. Marsh, "for a man to sell millions of bales impossible to deliver."

"Were not such transactions made last year?"

"I have no reason to know that such transactions were made. I doubt it. About 80 per cent. of the transactions on the exchange were hedge transactions.

"Why does the exchange refuse to make public its total sales?"

"We have found it to be impracticable. No cotton exchange does it. The exchange has no legal power to compel its members to report sales."

"You say it was immoral," asked Mr. Smyth, "to demand settlement of contract cotton at 20 cents, when selling spot cotton for 15 cents. Was not that done by members of the exchange, and not by spinners?"

"I should prefer not to go into personal transactions," answered Mr. Marsh. "My information is that members were involved, but that the bulk of those engaging in the transactions were not members." He asserted that Mr. Parker's irritation with the exchanges had obscured his recollection of exact facts as to certain transactions of last year, and that Mr. Parker's memory had gone back on him.

"It has not," said Mr. Parker with feeling.

"Mr. Parker is of enthusiastic temperament," went on Mr. Marsh. "He sees things somewhat largely and vaguely and it may lead to a great injustice. In his enthusiasm he has been guilty of a great injustice to the New York cotton exchange." He told of negotiations with the committee, headed by Mr. Parker and Mr. Smyth, and of the offer to make a special form of contract for spinners. Mr. Parker replied that the committee wanted no special favors—that it would take its medicine along with the producers, with equal rights to all, and special privileges to none.

Thanks were extended to the cotton exchange committee, its report was received, and the committee continued, Mr. Parker suggesting that after so full and free a debate, the committee might be able to get together with the board of the exchange, and if possible remedy the evil. President Cooper allowed the widest possible latitude to the debate and was warmly commended for the impartial manner in which he presided over the discussion.

SOCIAL EVENT.

On Thursday evening was given an entertainment by the municipality and Chamber of Commerce in honor of the Association. This event took place in the Jefferson Hotel Auditorium at 8:15 o'clock. John M. Miller, Jr., chairman of the entertainment committee, introduced the speakers, who were as follows: T. M. Carrington, first vice-president of the Chamber of Commerce, of Richmond; Governor William Hodges Mann, of Virginia; and Mayor D. C. Richardson, of Richmond. Polk Miller then told entertaining Southern reminiscences and stories. Songs were rendered by Mrs. William R. Reinhardt and Miss Charlotte Kendall Schroder. Miss Annie Louise Reinhardt in her violin solos, played with beautiful tone and expression. Miss Myrtle Redford was the accompanist. After the program had been rendered refreshments were served and the balance of the evening was passed in dancing with music by Kessnich's orchestra. In spite of the heat of the evening everyone voted the entertainment a most enjoyable one.

FRIDAY'S SESSION.

The attendance at the Friday morning session was small, partly owing to the intense heat of the day, and partly because some of the members preferred to discuss problems of their own, rather than listen to the reading of some of the papers. The first paper to be read at this session was on "Gin Compression of Cotton," by W. A. Gilreath, of Greenville, S. C., who said in part:

"With gin-compression, the improvement in method of handling cotton commences the minute it is delivered from

the gin, inasmuch as it is delivered in neat, smooth folds of lint, and packed carefully as each fold is put in, until the desired weight, say 500 pounds, is obtained. It is then automatically transferred and carefully compressed in the box in which it is packed, instead of having to be subsequently transferred after baling for compression. The bale can be packed in any shape or size, made either square or rectangular. The burlap or bagging is put on in a manner similar to that done in ordinary ginning or compressing. The question of the amount of tare must be settled by spinners. The gin compressors have started the use of 12 pounds of tare, which is sufficient to cover the bale carefully and neatly. I have on exhibit a bale which came out of a 100-bale shipment sold to one of your members; you can see the condition of it after it has been handled a number of times, and this condition shows that it is unnecessary to use the heavy jute bagging for cotton pressed in a gin compress. The expense of this gin compress is considerable, for it is necessary to expend approximately $4,000 for such a press, and, as cotton after compression should never be exposed to the elements, there must naturally be a warehouse constructed adjacent to each gin.

"Gin-compression has so far made most progress in the delta, because planters there have the means and are most intelligent, and are, furthermore, anxious to bring home to buyers the excellent character of their staple as contrasted with that raised elsewhere. By visiting this section, it will be readily seen why cotton varies in breaking strength. I would suggest to my spinner friends that they secure one shipment of cotton baled in a gin compress and run it through their mill separate and distinct from other cotton; you will then be convinced of the correctness of the statement that such cotton is more excellent in character than cotton ginned and baled in the usual method.

"When sufficient cotton be purchased from any locality where it has been gin-compressed to fill a car, it can be carried direct from the shipping point to place of destination without being unloaded for concentration or for compression. The ordinary freight car will contain 75 to 100 bales of gin-compressed cotton, as against 25 to 40 bales of ordinary flat cotton, and as compared with 60 to 75 bales of ordinary compressed cotton. There is necessarily a saving to the buyer of the freight on the excess tare which accompanies the large compressed bale; and there is a saving to the railroads in that it is not necessary to rehandle the cotton after loading until receipt at destination. There is a saving of time in transit, as it is not necessary to unload at the compress and re-load after compression. This saving in time of transit means a saving of interest, which is important to each manufacturer. With 1¼-inch cotton, at the price now ruling, and figuring interest at 6 per cent., the saving that can be fairly calculated in interest alone is $62.50, on each 100 bales.

"There are other savings, however; based on the Carolina Mill Rules of 1910, which allow 24 pounds of tare to the compressed bale, there is a saving of 24 pounds in tare, which at 20 cents per pound is $4.80. The saving on the freight on this tare would be in the average of 10 cents per bale, and when consideration is further had of the different manner in which the cotton reaches you, clean and without country damage, it is not too much to say that the manufacturer would have an advantage equal to fully $6.00 per bale in gin-compressed cotton over cotton ordinarily baled and compressed.

"But, to induce such method of ginning and of compressing, it is necessary for the manufacturer to hold out an inducement to the planter. Such inducement would be to allow to the planter, either in the price paid for the cotton or otherwise, an amount equivalent to the difference in the weight of the tare; and, furthermore, to allow to such planter the equivalent of at least ¼ cent per pound as a premium to him who properly gins and bales his cotton.

"The trouble in bringing about a change from the wasteful way in which cotton is ordinarily baled is that the planter naturally expects reimbursement for his extra outlay and extra expense, whilst the spinner has been unwilling to pay for the differences in tare and the equivalent of the differences in expense. But it will be impossible to popularize a better bale unless you pay the planter for the change; he is just about as smart in his line as you are in yours. There can be saved to you the loss in time, the sampling and re-sampling at the compresses, the loss in interest, the loss in country damage, if you will encourage a more intelligent method of baling.

"There have been organized in sections of the South responsible companies for the purpose of installing gin compresses and handling the product after compression. Recognition should be made by you of such companies and they should be encouraged in their effort to induce the improved methods of baling. Under a proper method of marketing gin-compressed cotton, three samples should be drawn from each bale,—one from the center and one from each side after the bale is in position to be compressed, or before it is weighed, and without disturbing the folds of the cotton. A number corresponding with the bale is placed in these samples, and the samples can be therefore subsequently classed and returned to the gin compress and class entered on the gin books opposite the weights, so that each planter can know exactly what he has for sale and the value thereof. When you buy from such responsible companies according to the types sent to you by them, you can rest assured that you will get exactly what the type shows and will receive the amount of cotton you pay for.

"What encouragement are spinners to offer? Is the planter to be assured that he can depend upon getting at least a fair increase over what we paid for a bale sold not at net weight but carrying excessive bagging, country damage, etc.? The matter can be determined by the spinners, and I believe that you will hold out encouragement to the intelligent planter by giving him such reasonable increase in price. If you do, I believe that the results will be more than satisfactory to you and that both planter and spinner will have saved money by the change from a wasteful, extravagant method of baling and handling cotton to an intelligent and careful method.

"There is no argument against gin compression; it is said that the cotton cannot be sampled and that there will not be warehouses for distribution. I think, however, that such arguments will be found to come from those interested in the maintenance of present methods, or in the continuance of existing compresses. Buyers of cotton have been heretofore buying bagging at 2 cents a pound and selling it as cotton at from 12 cents to 20 cents a pound, making

thereby a profit out of an unfair loading of the bale, to the disadvantage of both the mill and the planter. This deception has been going on for years. Does the spinner desire to buy cotton or does he desire to buy bagging? If you desire a change, it is you who must take the lead and show to the planter that you will encourage this intelligent method of gin compression, and that you will give it the preference by allowing him a reasonable excess in price as a premium for the intelligent handling of cotton.

"In conclusion, and summarizing the advantages of gin compression: The cotton will come to you in better shape and without damage; it will be covered with bagging of less weight than usual, not making you pay thereby freight on bagging; you will save interest on the money expended and will receive your cotton with less delay; you will receive just what you pay for. Under all these conditions, is it not your duty to encourage those who are seeking an improvement in conditions?

The discussion on this paper was extremely interesting inasmuch as it included an address by M. P. Sturdevant, of Glendora, Miss., one of the members of the Yazoo and Mississippi Valley Cotton Co., and a typical example of a "Delta Planter."

There were fifteen Mississippi planters present as special guests of the Association. They represented the districts around the Yazoo and Tallahatchie river valleys and they made this journey of Richmond, with the expressed intention of getting in closer touch with the spinners who use this delta or staple cotton in many of their mills. These men also represented the Yazoo & Mississippi Valley Cotton Co., the formation of which is so graphically described by Harvie Jordan in his article entitled "The Heart of the Cotton Country," in this issue. The planters present from this section of the Delta were W. A. Swift, D. S. Jones, S. F. Jones, D. E. Nichols, B. B. Provine, T. E. Lipe, H. E. Williams, M. P. Sturdevant, T. G. James, T. F. Stul, H. L. Walton, Heber Jones, E. J. Marley, E. M. Pursell and C. N. Campbell.

This subject was also discussed by Ira W. Williams, of Columbia, S. C., State agent for South Carolina in the Government farm demonstration work. The Association extended an invitation to growers to always attend their meetings and President Cooper stated that it was their intention next year to invite a much larger number, as their interests are so closely related that he was sure much good would result from their presence at the meetings.

The address by Howard Ayres on "The Importance and Possibilities of a Cotton Export Association" was not read before the Association, Mr. Ayres preferring to continue his discussion of Thursday morning on "Our Cotton Piece Goods Trade With China," which he did in a brief but interesting manner.

The next paper to be presented was on "The Present Status of the Cotton Ginning Industry the World Over," by J. E. Cheesman, of New York. Mr. Cheesman impressed upon his hearers the fact that since the patent granted to Hodgen Holmes, of Georgia, under date of May 12th, 1796, on a type of gin using circular saws, the only important advances in cotton gins of this type during the past 100 years consisted in modes of, and material used in construction and the manner of applying the driving power. In other words, the sole aim for improvement has been to increase the capacity regardless of the quality of product turned out. The object of his plea was for the use of roller gins rather than saw gins on all grades of cotton, but particularly on the long staple grades.

BETTER FACTORY ILLUMINATION.

At the close of Mr. Cheesman's address, J. M. Smith, of Cleveland, Ohio, delivered his paper entitled "Lighting the Way to Profits." He spoke as follows:

"Many wide awake managers have recently convinced themselves of the value of good illumination, but there remains in many places a great opportunity for improvement. There are mills in actual operation in the South, where a single 16-candlepower incandescent lamp, without the assistance of any reflector, is called upon to light four looms. Why, in even the best of the older installations, a pair of looms was fitted with only one such lamp in the weave alley and one in the warp alley. This lack of attention to details in illumination is the more surprising when we consider the really great results to be obtained by properly designed lighting.

"Installing good light in a cotton mill will increase the output, make more efficient operators, and show big returns on the necessary investment. This is a pretty strong statement, but let us look into the matter. In the first place it brings up the output for every hour of the day, to about that obtained under daylight conditions. This means that the entire plant from engine to looms are operating under a better load factor and the quantity turned out will therefore be a maximum.

In mill operation, two principles stand out as characteristic.

"1. Any irregularity of operation, broken thread in warp, floats, etc., should be "spotted" surely and quickly.

"2. The required attention, adjustment, or replacing should be done in the minimum time.

"To fulfill both of these conditions, good lighting is essential and every second that a loom or spindle is stopped, awaiting attention, cuts down the output. Every second saved in tying in a new thread or threading the warp through the heddles will be saved many times over in a day, where hundreds of employes are performing the same operation all day long. Nothing helps so much as to be able to see clearly every thread, strand, eye. Shadows make hiding places, and in commercial work we do not want to pay for hide-and-seek games.

"Much work requires the operator to move about and tend to several looms or spindles. If one has to pass from looking at a brilliantly lighted spot to a dark alley, and then to another light spot in the middle of a dark field, the eye takes a certain amount of time to accommodate itself to the changed condition. This is one of the evils of brilliant localized lighting. Besides tiring the eye it slows down the whole work.

"Similarly looking at the bare lamp itself blinds the operator and makes it difficult to see beyond the lamp as is necessary in tending a group of looms. Well diffused light is more comfortable to work by and eliminates dense shadows. Where units emitting a large amount of light from a small area are used it is practically impossible to get good light anywhere except on the top of the nearest looms.

"All non-productive motions reduce the output. A good lighting system takes none of the operator's time, does not require him to move lamps about, adjust cords, re-

flectors, etc. Much that I have said that promotes the quantity of the output improves the quality. Good lighting is, of course, necessary for inspection, but the prevention is better than the cure. A good illumination all along the way will keep out, to a large extent, the very thing that inspection is to reveal. One mill found that a number of pieces which had to be sold as seconds was reduced by from 25 per cent. to 40 per cent. under its new system of lighting.

"The personal elements of satisfactory conditions for the operator, is of attention-demanding importance. Psychological effects may be vaguely understood, but they exist. As it grows dark in the afternoon, the natural impulse is to relax and prepare for rest,—that's just natural—but we can arrange our artificial lighting so that the passing from day to dark will be very little noticed. A light-colored, well illuminated room suggests wakefulness, not sleep. The great enemy of efficiency is fatigue. Fatigue is necessary

C. B. BRYANT, SECRETARY-TREASURER.

to production, but if it must exist, let it be as a result of productive labor. A poor lighting outfit tires the eye, which in turn tires the whole being. Are you taking the employe's strength and giving no returns?

Everything that promotes the health, comfort and efficiency of the worker helps to get and keep a satisfactory and satisfied working force and satisfaction is the best antidote for labor troubles. The mill manager will naturally ask "What method or system satisfies the conditions here named?" There are many systems and each has its advocate, more or less prejudiced by commercial affiliation. The writer must confess to such prejudice himself.

"The mill man desirous of remodeling his lighting installation should bear in mind always that his object is to improve the quality and increase the quantity of his output. This is the only consideration. To accomplish this the installation must be planned by one who knows not only the lighting business but one who knows also the textile industry from the cotton bale to the cloth jobber. You are not interested in lamps, or watts per candle, or lumens per watt, or foot-candles; these are factors dealt in by the lighting expert. You are interested in yardage—and equipment which satisfies your conditions must be equipment which will add to your profits."

R. M. Miller, Jr., chairman of the committee on publicity then read his report and the committee was ordered continued. Lewis W. Parker read the report of the committee on uniform sales contracts and asked that the committee be dismissed.

The report of the joint committee on ginning, baling, buying, tare, etc., was given by T. H. Rennie, chairman of the committee, and discussed by Secretary Woodbury of the National Association, who said that he hoped a little later to have a meeting of this joint committee in New York for the purpose of taking up this subject at greater length. The committee was continued.

The report of the secretary and treasurer was read and accepted. The report of the committee on resolutions was read and accepted and the resolutions unanimously adopted. The principal resolutions were as follows:

Resolved, That the thanks of the Association be extended to Hon. John W. Weeks for his very able and successful support of the Appalachian and White Mountain Forest Reserve Bill. The Board of Governors recommend that Sir Charles W. Macara, Bart., President International Federation Master Cotton Spinners and Manufacturers' Associations, be made an honorary member of this Association, and that the congratulations of the Association be extended to him. That President Cooper be directed to sign certificate of membership.

Resolved, That a standing committee of not less than fifteen be appointed by the President to be known as the Committee on Tariff and Other Legislation, whose duty shall be to act for and represent the Association and cooperate with committees from other similar organizations, in all matters of legislation and that meetings of the same to be subject to the call of the chairman of the said committee.

The members appointed to serve on the committee of fifteen on Tariff and Legislation were as follows: R. M. Miller, Jr., chairman, D. Y. Cooper, and S. W. Cramer, of North Carolina; A. H. Bahnson, of Virginia; Lewis W. Parker, J. D. Hammett and J. H. Morgan, of South Carolina; C. D. Tuller and T. I. Hickman, of Georgia; Scott Maxwell, of Alabama; L. D. Tyson, of Tennessee; T. L. Wainwright, of Mississippi; Paul J. Marrs, of Kentucky; W. B. Munson, of Texas; A. W. McLellan, of Louisiana.

Then the committee on nominations reported and after the reading of the report each candidate nominated was elected by a unanimous rising vote. The new officers are Capt. Ellison A. Smyth, Greenville, S. C., president; W. A. Erwin, Durham, N. C., vice-president; C. P. Bryant, of Charlotte, N. C., secretary and treasurer. Four new members were elected to the Board of Governors for a three-year term as follows: Stuart W. Cramer, Charlotte, N. C.; William E. Hooper, Baltimore, Md.; Jno. A. Law, Spartanburg, S. C.; and T. L. Wainwright, Stonewall, Miss.

At the close of the final session while some of the members immediately left the city for their homes, others availed themselves of the privileges of the country club or attended the baseball game between the Lynchburg and Richmond teams. The board of governors have not as yet decided where the next meeting will take place but the many members who have been so royally entertained at Richmond would not be loath to learn that same lovely city had again been selected for a meeting place.

National Association of Hosiery and Underwear Manufacturers.

The National Association of Hosiery & Underwear Manufacturers held their seventh annual convention and sixth annual exhibition in Philadelphia, Pa., beginning on the morning of May 22d and continuing to the evening of May 27th. The exhibition which was held in conjunction with the meeting of the association occupied Horticultural Hall on Broad street below Locust and was open between the dates mentioned. The meetings of the association were held in the convention hall of Hotel Walton on the three days, May 23rd to 25th, inclusive. The machinery exhibit this year was of such proportions that in the words of C. B. Carter, the secretary of the association, "It was really too large for the quarters and some of the exhibits have been cramped for room. We shall have many more applications for next year and it will be absolutely necessary for us to secure larger quarters to provide room for them." Delegates from all parts of the United States were present, the representation being the largest and most complete ever attending a convention of this character.

TUESDAY'S SESSION.

The convention was opened on Tuesday morning, May 23rd when the meeting was called to order by President Garnett Andrews. The minutes of the 1910 convention were accepted without reading after which the president made his annual address. President Andrews spoke as follows:

"Today the knitter is being confronted with the greatest number of problems, and serious problems, that have ever yet been presented to him. He is in reality fighting for his existence owing to the seriousness of these conditions. The old time small knitter of both hosiery and underwear is being confronted with these problems, owing to competition from the larger mills. The organization of the large mills has now begun to tell very seriously in the question of economy, which beginning with the cost of yarn goes through every department of overhead expense and ends with the selling department, in which cost undoubtedly the large manufacturer has the advantage. During the past year a great many weak mills have been forced out of business and it is getting so that the man with small capital who desires to start a manufacturing business of hosiery or underwear no longer has the same opportunity for success that he had ten years ago. Owing to the price of yarns, and the narrow margins of profit he has not the same opportunity of starting with a small capital as formerly. Never was competition so keen before in our line of business. Being more conversant with the hosiery end of the business I can speak more emphatically in making the assertion that we have never yet seen such a revolution in merchandise as has taken place in the past twelve or eighteen months. Formerly the man who gave the best value in an article was the manufacturer who primarily gave the best weight. Gauge was not so necessary though it was an important factor.

Today the demand is for the sheerest, gauziest, flimsiest article that can be made to hold together and the consumer demands not only that this merchandise be made to hold together but he demands wearing quality, the like of which under the old methods of dyeing was impossible with the heavy weight article.

Again take the demand that is increasing continually for silk hosiery. Up to two years ago, who ever heard of a silk hose under $1.50 per pair? Today better values are given at 50 cents per pair, and there are goods on the market at 25 cents per pair in so-called silk hosiery, being either plated thread silk or spun silk, which causes those who are not in the business to wonder how they can be manufactured at a profit. The knitter is constantly forcing the manufacturer of machinery to turn out finer gauge machines. He is compelling him to use all of the genius at his command, in his endeavor to place upon the market something new and something different from his competitor. The hosiery and underwear manufacturer can take a great deal of pride in the fact that not only have they kept their word to the people of this country when they asked for protection on hosiery in the Payne schedule, and instead of increasing our prices, the consumer is today getting the best value in hosiery that has ever before been given under any administration and under any circumstances. For appearances and for wearing quality, the consumer today is able to purchase values that up to two years ago would have been simply impossible.

GARNETT ANDREWS, RE-ELECTED PRESIDENT.

The greatest question that now confronts us is the tariff question. During the 21 months that the Payne Law has been in operation a very close watch has been maintained on the foreign and landing value of German hosiery, in fact, they say we have figures covering every transaction through the Custom House, and while the German manufacturers of hosiery have reduced the foreign value of their product to some extent, the increase on duty under the Payne Law has raised the landing values of the classes which received the increase, much above the values that existed under the Dingley Law, thus placing our manufacturers in a much better competitive position, and if the tariff agitation was over it is my opinion American manufacturers of hosiery would have all the business they could attend to.

It is impossible to foretell at this time what our fate will be before the new ways and means committee of the House. Your legislative committee who have this in charge will present their facts and will stand upon the merit of their cause. The figures presented by ourselves, we understand, have been corroborated by the investigations made by the Tariff Board, and, in fact, it has been asserted that we have not really asked for as much as the difference in labor price warrants us in doing. Besides the competition with Germany, we are face to face with the competition of Japan which has made rapid strides in the knitting of hosiery and underwear and has already captured the Chinese trade and is driving the British and Germans out of the trade in India, and Egypt by its cheap merchandise.

The past year with its high price of raw material and its demoralizing sales market has been for the most of us a very unprofitable one, possibly the most unprofitable period the business has ever known. It is at such times that our organization proves of some practical value to its members. Until the Association was organized, did we ever get yarns on the net weight basis? Did we ever have continual friction with our customers regarding certain so-called trade abuses? A great many of these have been smoothed out and a better understanding today prevails between the jobber and manufacturers than ever before.

In looking ahead of us for the next few years I see a fierce struggle for existence. It will be a question of survival of the fittest. Those manufacturers who can so organize their business as to turn out better goods and cheaper goods than heretofore will be those who will survive. The haphazard manufacturer who does not know the cost of his goods will not be able to stand the test. The struggle will be a costly one for the survivors. It is not going to be an era of large profits or even of fair profits to some of them except to those manufacturers whose ability to hit upon novelties or styles that will appeal to the public taste and take advantage of them until other competitors begin to imitate them too closely—these will be the only ones whose returns on their investments will be legitimate.

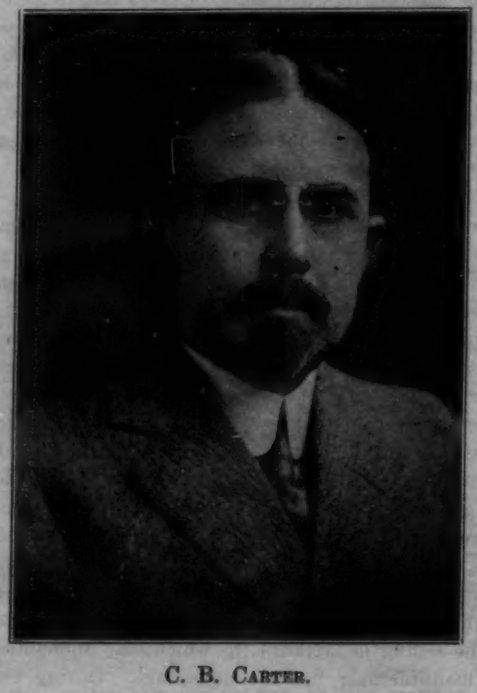
For the immediate future I can not help but caution my fellow manufacturers to go slow on stocking up merchandise. The market is a falling market. The prospects up to date are for a large cotton crop. This will doubtless drive down the prices of yarns, through the yarn manufacturer or spinner is today in as bad a plight as is the knitter and is complaining of lack of profit. Lower prices on cotton on the present selling basis of yarn will give him a larger margin of profit, but will he be able to demand it? Won't he have to give this margin of profit to the knitter, who in turn will give it to the jobber, and the consumer in the end will be benefited?

There is enough machinery ready to be operated in this country that if put on full time for eight months would supply the requirements of any population for the entire twelve months. Therefore, I can not help reiterate before closing that manufacturers who are stocking up merchandise without having orders to cover it are taking a great hazard. Let us all hope that the Fall will open up more propitiously than the signs now indicate.

REPORT OF THE SECRETARY-TREASURER.

C. B. Carter, the secretary and treasurer then read his annual report which was in part as follows:

Another year has passed, and we are called together to not only review the progress that has been made, but also to discuss the things that we have attempted and as yet have not successfully performed, and to consider other issues pertaining to the advancement of our industry, which are likely to produce results that will not only increase our profits, but at the same time enable us to do business on a more satisfactory basis. In carrying on our work, we have always acted on the assumption that there was more in business, at least more to be derived therefrom, than the actual profits secured from the manufacture and sale of our goods. The average business man devotes a very large proportion of his time to his business, and while a remunerative profit is essential, yet if the business can be conducted on a fair and square basis without petty annnoyance and grievances, the manufacturer is in a healthier and happier state of mind at the end of his fiscal year. We have not accomplished everything that ought to have been done, but we point with pride to the things that



C. B. CARTER.

we have successfully achieved, and it is the purpose of this report to tell you about these matters, rather than to explain why or apologize for things we have not accomplished.

The question of cost finding has been given considerable attention practically ever since the Association has been organized, as it was felt that this feature of the manufacturing business, while the most important one, had not been given the attention it deserves and actually requires. Papers have been read at the annual conventions discussing this question in a general way, and various plans have been devised in an effort to bring about improved conditions.

The sub-division of the various branches of our industry into Sub-Associations has brought this question more prominently to our members' attention, and possibly the greatest achievement the members of the Sub-Associations have to show from this special line of work is a better understanding, of not only the elements of expense constituting the cost of manufacturers, but also a more correct realization of the actual expense. The most forcible plan that has so far been devised in arriving at a proper understanding

of costs was that of different manufacturers exchanging views, and from this experience, condensed statements were forwarded to each one co-operating, giving average cost under each heading.

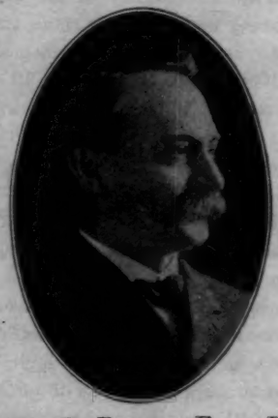
A recommendation is embodied in the Executive Committee's report upon the subject, to the effect that our Association employ, in some advisory capacity, an expert accountant and efficiency man who would be at the services of our members on some fair and equitable basis—in order that the expense of installing systems would not be prohibitive owing to the large expense involved in employing professionals, who while thoroughly capable in many respects yet are not fully conversant with our business and prescribe treatment that is not required or else too costly. We believe something ought to be done in this direction, and we, therefore, invite your careful attention to the Executive Committee's suggestions.

The net weight yarn movement is moving along quite merrily, as is evidenced by the increasing number of knitting manufacturers who are demanding and receiving net weight terms as well as to the fact that the yarn salesmen are having a strenuous time trying to dodge the issue, but like Caesar's ghost, it will not down. Depressed business conditions are largely responsible for the success of this movement, as the spinner is not nearly so dictatorial and is usually very willing to grant the knitters any reasonable request to induce business, and certainly a demand for net weight terms is both equitable and just.

Our credit bureau department—now in operation for the past fifteen months—is one line of work successfully performed, of which we are naturally very proud. When we first began work on this proposition many of our members were skeptical both as to the practical value of the information we proposed to furnish and the willingness of the manufacturers to supply the necessary data from which to base our reports. Others were unwilling to co-operate, fearing that their competitiors might in some way have access to or be advised of their list of customers, or that the unfavorable information they might submit to the Association might in some way reach those upon whom they reported. The developments of the work and the absolutely confidential manner in which same is handled, has completely satisfied the large majority of our members, who are giving their hearty support to this Department. Three rating books have been published and distributed to all members who have qualified themselves as required. We have found that many of the members were not co-operating, because of the fact that they did not fully understand the workings of the plan, but when same was explained to them, they immediately became interested, and for this reason our road man can be or great assistance in further increasing the value and power of this department. We have published in pamphlet form nearly a hundred testimonials from members who are using this credit bureau, although altogether there are over 200 members co-operating, and we submit for your consideration how valuable is this experience of these 200 manufacturers regarding the credit standing and business methods of the knit goods buyers. It is information you cannot obtain through any other source, and it's all free to the members..

Our collection department, while not nearly so valuable as the credit bureau, is yet a very important feature where the buyer pursues a waiting or belligerent policy. This department has now been in operation for nearly five years, and the details of same are very simple, as a series of printed blanks are employed in carrying out the plan. These blanks are furnished the members free of cost, and no charge is made on any collections that result therefrom. Over 100 members are using this department, but the details of same are of such a character that we have been unable to keep a record of the collections that have been made through same.

An inspection of the official program and publication gotten out by the Association this year must convince every member of the growth of our Association's influence in many directions. The book this year is larger and better in every respect than that of any previous one; containing more advertisements of a higher standard, more useful information, more comprehensive in scope, is better illustrated and better bound, and reflects in every way credit upon the organization. We take pleasure in directing your attention to an obvious duty, that of reciprocating in your business dealings the courtesies extended by those whose support has made possible the issuance of this book, as these concerns believe in us and our work, and we should not be lacking in showing our recognition of this fact when the opportunity to do so presents itself.



CHARLES E. LEIPPE, RE-ELECTED FIRST VICE-PRESIDENT.

Our exhibition this year at Horticultural Hall will well repay a visit by every member of this assemblage. There will be found an exposition of all the arts and appliances entering into the manufacture of hosiery, underwear and knit goods such as has never been shown before. All that is new in both machinery and supplies is grouped in the hall for the benefit of those who wish to keep abreast of the age, and none should miss the opportunity of learning in what direction better goods can be produced at less cost, in a shorter space of time or with less help and trouble than by the methods they are now making use of.

In concluding my report as secretary-treasurer I wish to thank one and all for the many courtesies extended me during the past year. The work and responsibility in connection with the position is increasing very rapidly, and it is my sincere hope that the additional efforts put forth in covering the work as it develops, will result profitably to all interested. Your president and other officers, especially the Executive Committee, have been untiring in their efforts to further the best interests of the Association, and they should receive the sincere thanks of every individual member.

The report of the standing and special committees were read and also the report of the sub-associations.

REPORT OF THE EXECUTIVE COMMITTEE.

Mr. Carter then read the report of the Executive Committee. Mr. Carter said:

Your executive committee, in presenting a report of the Association's activities during the past year, have to confess that in some directions many difficulties have at least for the present proved unsurmountable in accomplishing the ends desired and the results which it should be within the province of the Association to perform. The knitting manufacturers have been compelled to face conditions during the past year on a somewhat different basis than probably have confronted them in all previous years of their experience in the knitting business. Many reasons have been outlined in explanation, but it is doubtful if any one cause can be attributed to the unhealthy condition in regard to the manufacture and distribution of knit goods. There seems to be a spirit of unrest permeating the general public which is reflected very forcibly through the jobbing and retail trade. We assume that the uncertainty of the ultimate results of this period of apathy is forcing the retail trade to limit their purchases to their immediate requirements, and this is reflected in the jobbing trade, as you are all painfully aware. It is very unfortunate indeed that the knitting manufacturers did not earlier realize the trend of the times and discontinue the manufacture of goods on a minimum basis, unless the demand was apparent.

In the first place, and as has been agitated so frequently by President Andrews during the past year, the most practical step that can be undertaken to improve conditions in the knit goods business is for the manufacturers to curtail productions to accommodate the manufacture of only sufficient goods for which they have orders. We do not believe any manufacturers present will question the wisdom of such a course, although it may be granted that sometimes a manufacturer may realize a smaller loss by running his plant full and selling at cost or a little under, rather than operate on a profitable basis in a limited way, but manufacturers with such views should look on the other side of the question and consider the possible demoralization that they are not only causing for the present, but also in the future, for it is extremely difficult to raise the basis of prices when once margins have beeen narrowed. While our efforts in the past to induce material curtailment has not born the fruits we have hoped and reasonably expected, yet we feel that we should not become discouraged, and that a more earnest endeavor should be made to demonstrate to the manufacturers, not only the wisdom, but the necessity of limiting their production in times like the present.

The second thought we wish to bring to your attention as a means of improving the conditions of the knitting manufacturers is for the Association to pursue a vigorous line of work in the way of impressing upon the manufacturers not only the most of manufacturing but also economies that may be effected through what is generally termed "efficiency work." Theoretically vast economies may be effected through proper installation of efficiency systems. Practically, many of these theories work out successfully, and we wish to present for the consideration of this Convention the proposition of employing, in some advisory capacity, or in whatever way may seem practical, the services of a practical and experienced accountant and efficiency man, who will devote his time, or the greater part of same, to a study of the knit goods manufacturing business with a view of rendering individual manufacturers, or collectively, the benefit of his investigations.

We, of course, have not accomplished all the reforms that we have had in view, or even that have been attempted; at the same time enough has been performed to demonstrate that the organization is a power for good, and with the past results as a basis and guide there is no reason but that we may accomplish other important measures that must result to the financial welfare of the members of the Association. Fortunately we have steered clear of many complicated questions that either seem to be impractical or that might mitigate disastrously to the Association's progress.

One very potent reason which is generally acknowledged as influencing the spirit of unrest which is apparently forcing the jobbers to pursue hand-to-mouth policy is the fluctuating tendencies of the cotton market. While crop conditions, of course, regulate the price to a considerable extent, yet we think a very large amount of the trouble and uncertainty is caused by speculation-gambling on futures. Whether or not the legislation that is trying to be effected at Washington can correct these troubles or at least elimi-

EDWARD BLOOD, SR., RE-ELECTED SECOND VICE-PRESIDENT.

nate a considerable element of uncertainty will prove effective and result in more permanent values is a question, but it seems to be the consensus of opinion that much good would result therefrom, and we urge that a resolution be passed at this Convention upon this subject, and that our Association should render every assistance within its power to follow up such action as may be agreed upon.

We invite your attention to a subject that has been discussed at many of our previous annual gatherings, and which has been taken up during each year; that is, the value of statistical work to the knitting manufacturers.

President Andrews made special efforts during the past year to collect data, but with very meager success. It may be that many of the objections offered by members in the past to give the Association information in this direction have been overcome, and that they will gladly co-operate now. This question will be discussed more fully at a later session, with a view of securing our members' consent and

instructions in again endeavoring to successfully complete the work we have started on several different occasions.

The continued publication of The Knit Goods Bulletin has proven of material value in increasing the Association's membership and broadening its sphere of usefulness. Enough advertising from the associate members is solicited to pay the cost of publishing and mailing same to every knitting manufacturer in the United States. In consequence the knitting manufacturers who have not joined are kept fully alive as to the progress we are making, and such publicity has induced many new members who otherwise might not have seen it to their interest to join. We commend very highly this line of work and recommend that the Bulletin be published in future as formerly, and we further recommend that the individual members exercise greater interest in contributing news items, also articles of general interest for our publication. We want to make this Bulletin a lively book, and to accomplish this result we must have the benefit of our members' assistance.

One very important step taken by our organization during the past year was that of applying for a charter, as it was the consensus of opinion that such a step would not only strengthen the Association, but also give it an identity and a legal standing that was never possible under the old basis, and at the same time by operating under a charter the individual members would not incur any liability through any action taken by the organization, as would be the case under the co-operative plan, upon which our Association was originally formed.

Papers were duly filed and charter has been granted, and in conforming with the restrictions prescribed thereby certain changes in our Constitution and in our By-Laws have been found necessary, and we therefore recommend that the entire Constitution and By-Laws under which charter was granted be adopted by this Convention.

When we consider the business depression prevailing and the unprofitable conditions confronting the knitting manufacturers and those from whom they purchase their supplies, we consider that great results have been achieved, and we look forward to future years of Association prosperity and usefulness that will make a membership in our organization one of honor and of great benefit.

Other miscellaneous business was brought before the session when adjournment was made until the afternoon session.

The meetings of the various hosiery sub-associations which were announced at the morning session took place during Tuesday afternoon as did also the special meeting of the underwear members. At these meetings, which were not confined to members of the association, but included any manufacturers who wished to attend, discussions pertaining to their immediate branch of the business was in order.

WEDNESDAY'S MEETING.

At the morning session of the second day of the convention, J. M. Smith, manager of the industrial department of the Buckeye Electric Company delivered an address entitled "Lighting the Way to Profits in a Knitting Mill." A very interesting paper was read by J. H. Shuford of the Berlin Analine Works, New York City, on "The Dyeing of Hosiery with Sulphur Black and Developed Colors."

RESOLUTIONS ADOPTED.

Various questions were discussed by the delegates present and the following resolutions were adopted:

Whereas the knitting manufacturers of the United States are confronted with demoralized trade conditions which have limited the sale of their commodities and narrowed margins of profit to a basis where there is little or no remuneration in the manufacture and sale of their goods:

Resolved, that the National Association of Hosiery and Underwear Manufacturers in convention assembled urge upon the knitting manufacturers of the country the importance and the necessity of curtailing production to goods for which they have actual orders in hand. And be it further

Resolved, that the officers to be elected at this Convention do everything within their power to secure the co-operation of not only the members of the National Association of Hosiery and Underwear Manufacturers, but of all other manufacturers of knit goods and thereby secure more staple business conditions.

Whereas, spinners and their representatives have not complied generally in selling cotton yarns upon the net weight basis, and realizing the saving to the knitters effected through this method of purchasing yarns:

Resolved, that the officers are hereby instructed to begin a prompt and aggressive campaign not only amongst the spinners and their representatives, but also amongst the knitting manufacturers in impressing upon both seller and buyer the advantages of net weight terms.

Whereas, it is believed much of the uncertainty and depression now prevailing in our industry has been caused by gambling in cotton futures:

Resolved, that the officers of our Association are instructed to lend our Association's support to any movement now started, or which may be attempted in future to regulate or mitigate this evil.

ELECTION OF OFFICERS.

The next business before the convention was the report of the nominating committee and the election of officers for the ensuing year, which were as follows:

President—Garnett Andrews, treasurer Richmond Hosiery Mills, Chattanooga, Tenn., and Chattanooga Knitting Mills, Chattanooga, Tenn.

First Vice-President—Charles E. Leippe, Reading Knitting Mills, Reading, Pa.

Second Vice-President—Edward Blood, Sr., John Blood & Bro., Philadelphia, Pa.

Secretary-Treasurer—C. B. Carter, Philadelphia, Pa.

Board of Directors—John D. Berger, Berger Bros., Schuylkill Haven, Pa.; Joseph Feldenheimer, Roxford Knitting Co., Philadelphia, Pa.; J. O. Wells, of Cooper, Wells & Co., St. Joseph, Mich.; W. Park Moore, of Brown Knitting Co., Philadelphia, Pa.; William E. Hall, Shaw Stocking Co., Lowell, Mass.; and W. C. Plunkett, Capron Knitting Co., Utica, N. Y.

Advisory Board—Harold Lamb, Union Mfg. Co., Union Point, Ga.; F. L. Chipman, Chipman Knitting Mills, New York City; Joseph S. Rambo, of Rambo & Regar, Norristown, Pa.; and Fred W. Simons, of Simons & Struve Hosiery Co., Frankford, Philadelphia. Other routine business was attended to during the balance of this session.

In the afternoon there were meetings of the various hosiery sub-associations as arranged and announced at previous sessions and also a special meeting of the underwear members. Manufacturers of woolen hosiery, gloves, mittens, sweaters, and fancy knit goods were provided with

rooms in which they met to discuss questions directly affecting their interests.

The social feature of the evening was a smoker and entertainment which was given in the ball room of the Walton. There were about 300 delegates present who enjoyed the continuous vaudeville given and the fun continued until a late hour.

The balance of the week was given over to special meetings of manufacturers in each line of knit goods which were held in different rooms of the hotel and discussions in a small way as to the best method of handling certain features and lines. Because of the intense interest expressed by many delegates, the exhibition hall was kept open one extra day to better accommodate all visitors. This exhibition of textile machinery and appliances, which occupied both the first and second floors of Horticultural Hall, formed one of the most interesting features of the convention. Thousands of persons visited the display, which included every kind of machine required in the manufacture of hosiery and underwear. The hall was turned into a great mill where thousands of hose and undergarments were being turned out daily with scarcely a particle of noise, so admirably were the machines adjusted. A partial list of the exhibits are given in another part of this issue.

MAKING A TEXTILE MILL PROPERTY INVENTORY.

Two textile mills belonging to a certain corporation were recently subjected to a systematic inventory by Lockwood, Greene & Co., Boston Mass. Because of their peculiar equipment and the rather unusual market conditions at the time of the examination, the conclusions of the engineers in placing a final value on the properties contains matter of particular interest to manufacturers of textiles.

The mills will be designated as No. 1 and No. 2. From a detailed investigation the actual physical value of the two plants was determined as

	MILL NO. 1	MILL NO. 2.
Value of Factory Buildings, Machinery and all other equipment	$671,000	$462,000
Value of lands and tenements	138,000	31,000
Totals	$809,000	$493,000

For determining the so-called "actual value" of these properties the following quotation from the report is given: "It is to be understood that the values are those of a plant which is being operated, and not as a plant which is closed down for an indefinite period. Were we to consider the value of the properties as idle properties, we could only assign to them such values as the lands, buildings and machinery might bring at a sale. We do not, however, under the existing circumstances consider the properties to be idle for any great length of time, the present shut-down being merely such a closing as is thought to be necessary because of the existing market conditions. On this basis we have estimated the values of the different properties.

We must call attention again to the producing capacity of the No. 1 mill. This plant is not a balanced plant at present. There are installed 40,432 spindles with but 613 looms, while 29,736 spindles only are being operated to supply these looms. Ordinarily on goods of this class 27,000 spindles would supply 613 automatic looms, indicating to us that the spinning frames are running at a slow speed (making the cost of production greater), and that the real rating of the mill based on its producing capacity should be 27,000 spindles. There is space in the buildings to increase the capacity to 900 looms, or perhaps to 950 looms with all necessary preparatory machinery, some of which is now in the mills in a partly erected condition. The itemized values given for mill No. 1, therefore, represent a mill with a producing capacity of 27,000 spindles and 613 looms having enough building area and part of the required machinery for a mill of 40,000 spindles.

The value of machinery not in use, not including one of the steam-turbine units, which however, is idle, is estimated to be $45,000, if new, with a present value of $32,000. The value of a new plant like mill No. 1 would be approximately $27.00 a spindle without land or tenements. On the basis of 27,000 spindles this plant if new would cost approximately $729,000 without land or tenements.

At the same rate of depreciation assigned to the plant, the present value of such a 27,000 spindle mill would be approximately $576,000.

The combined value of a new 27,000 spindle plant and same amount of unused new machinery as now in mill No. 1 would equal approximately $774,000 without land or tenements. The present depreciated value would be approximately $608,000.

Attention is called to the valuation which has been given to mill No. 2. This plant was originally designed for a woolen mill, and the present equipment is part for the manufacture of woolen goods and part for cotton goods.

The itemized valuation has been based upon the assumption that the plant would be run on goods for which the machinery installed is adapted, and that the plant as a whole would be operated in that way, although at the time of the examination only the cotton machinery was in operation and it is believed that the remainder of the plant had been closed for some time, in fact, was closed because there was no demand for the goods which could be manufactured. On this basis therefore, it is not possible to give mill No. 2 the value as a producing plant which has been assigned it in the itemized statements. There are but 18,000 spindles in operation. If based on this capacity the plant would have a value of practically $450,000 if new, and a present depreciated value of about $225,000 exclusive of the land.

An American consul in a Mediterranean country reports that a local importer has requested to be placed in communication with American manufacturers and exporters of hand and foot power embroidering machines for making the tambour-stitch work. Catalogues, price lists, discounts, and quotations f.o.b. New York should be sent, and all information relative to terms, packing, etc., should be given promptly. Correspondence may be in English. Copies of catalogues, price lists, and discounts should also be sent to the consulate forwarding the report. For further information address Bureau of Manufactures, Washington, D. C., and refer to File No. 6681.

International Cotton Congress.

(BY COTTON'S SPECIAL CORRESPONDENT.)

The eighth International Cotton Congress closed in Barcelona on May 10th, after a series of most interesting sessions. Three hundred delegates attended, representing 90 per cent. of all the cotton spindles in Austria, Belgium, Denmark, England, France, Germany, India, Italy, Japan, Norway, Portugal, Russia, Spain, Sweden and Switzerland.

Presiding over the opening Senor Calvet stated that Barcelona was the principal textile city of Spain and had a notable connection with the cotton industry, the trade having been carried on there continuously since the twelfth century. Spanish cotton manufacturers entered the International Cotton Association in 1905, the second year of its creation, promising at the time modest but loyal co-operation in the work. That promise they had honorably kept. They had spared no effort to support the vast plans of the Federation for the good of the industry, and for the promotion of cordial goodwill among the people of all nations. Their task was not completed, but they were well content with the results already obtained. Speculation continued to prejudice both manufacturing and consuming interests, and had been stimulated by the shortness of the American crop during the last few years. But the effects of speculation had been minimized by the efforts of the international organization.

National associations had been strengthened and trustworthy statistics as to invisible stocks of cotton and as to consumption were now available. Other positive benefits which had been secured were the modification of the contract for the purchase and sale of raw cotton, the acquirement of scientific data about the humidity in cotton, insurance against fire in factories, and the appointment of arbitrators for the settlement of differences which might arise about contracts. The Spanish spinners were grateful to the Federation for selecting Barcelona for the eighth Congress. Barcelona distinguished herself from her sister cities of Spain by concentrating within her borders the industrial activity of the whole Peninsula, more especially with regard to textiles.

Although he could not assert that the first cotton manufactured in Europe was manufactured in Catalonia, it was true that Catalonia was one of the first European provinces to engage in this trade. Until the middle of the last century Spain maintained her supremacy in the making of cotton goods, coming next to France, and until lately she occupied the fourth place on the list. But the last thirty years, during which other nations extended their colonies and their sources of wealth, had brought only ill luck to Spain and had held the energies of the Spanish spinners spell-bound. Though their traditions were glorious, they had been unable to keep pace with other countries in material growth and development. Now they were desirous of making up for lost time and of availing themselves of the experiences gained by men of all nationalities.

Sir Charles Wright Macara, chairman of the International Committee, who will require no introduction to readers of COTTON, presented the annual report of the International Committee. He reminded the Congress that Barcelona was once the Manchester of Europe, and that to Italy belonged the honor of first manufacturing cotton goods in Europe. These were comparatively modern events, however, for as far back as 500 years before the Christian era it was known that cotton fabrics were made in India. Today the cotton industry was world-wide in its extent, and never in its history were its requirements and its conditions as well known as they were now. The International Federation, during the seven years of its existence, had disseminated a vast amount of information and had exercised a powerful influence upon rulers, governments and peoples. We need only mention one or two of its labors. Courts of arbitration for the settlement of international disputes in the cotton trade had been appointed, and the sixteen affiliated countries, with one or two exceptions, had nominated their official arbitrators.

Steps had been taken in connection with the formation of mutual fire insurance companies, both national and international, and the information which had been collected would be of the greatest use. Conferences had been held with the Cotton Exchanges of Liverpool, Bremen and Havre, and though the concessions which had been secured were not all that had been advocated, it was hoped that a fair basis of settlement would be reached. The Federation's statistics of stocks of cotton and consumption of cotton were now supplied by the owners of ninety per cent. of the spindles of the world, and were of inestimable value in allaying excitement about cotton supplies. He was convinced that there was no surer means of bringing about universal peace than the instruction of the various nationalities in true appreciation of their interdependence.

Continuing, Sir Charles said: "I regret that in meeting you at the eighth International Congress I have to report that the state of the cotton trade throughout the world is still very unsatisfactory. No amount of knowledge or industry can save us from disaster if things go on as they are now. If we had had a sufficient supply of raw cotton at a reasonable price there would probably have been work for all the spindles and all the looms, large though the additions to machinery have been in recent years, but with cotton comparatively scarce and prices enormously high there has been most serious curtailment in the consumption of cotton goods, and that curtailment has disastrously affected the trade, not in one country but in all countries. Determined efforts continue to be made to increase the supply of the raw material from the present cotton fields and to open up new sources of supply wherever this can be done successfully. Special attention during the last twelve months has been directed to India, and great pressure has been brought to bear upon the Secretary for India by two influential deputations. It is pleasing to note that a large increase in the production of East Indian cotton has taken place during the last five years, and that the quality has been improved. It has been clearly demonstrated that large quantities of long-staple cotton, such as Lancashire requires, can be grown, provided the recommendations of the Brussels Congress are carried out. This view is borne out by the reports of the highest officials of the Board of Agriculture in India. These reports will be laid before the Congress. I am emphatically of the opinion that the speediest relief for the shortage in

the supply of the raw material for the cotton industry of the world will come from India."

"We want cotton-growing to be remunerative to the grower, just as we want cotton manufacturing to b remunerative to the spinner and manufacturer, and we shall never have continuity of satisfactory trade until we have put in operation means to deal effectively with those who increase the price of our raw material by gambling operations. I confess I do not see any immediate prospect of relief from the existing state of things unless we resort to the plan which I advocated both before and since the International Federation was established, and which I advocate now more strongly than ever, the adoption of systematized short time, an arrangement which will enable all to bear an equal share of the burden according to their strength and which will impose a ruinous burden on none. Having very near to my heart a desire for universal prosperity in the cotton industry, I earnestly hope that disaster may be staved off by an early resort to this plan, which is the fairest both to employers and operatives."

An interesting section was taken up with the discussion of proposals for extending the area of land under cotton cultivation. Here Moritz Schanz (Germany) pointed out that the European cotton industry is to a very great extent still dependent on one large source of supply, the United States, who extend their supply to the utmost limit possible. But the experiments of a number of European countries in their own colonies have proved conclusively the possibility of an extensive and remunerative cultivation of cotton in many countries in which so far little or no cotton-growing is undertaken. If the practical results of this work have not so far been more important there is no need for astonishment, considering the shortness of the time expended upon it. At present the production of the merchantable raw cotton of the world fluctuates between sixteen and twenty million bales annually. Latterly it has been on the low scale, and the opening up of new districts is one of the most urgent economic questions in which most of the industrial nations of the world are equally interested.

Speaking for the British Cotton-growing Association, R. H. Jackson and J. M. Thomas said attempts are now being made by the Agricultural Departments of India to improve the quality of Indian cotton, and also the quantity. During the year the Association have undertaken a very large number of new ventures, and there is reason to hope that in a year or two they will produce an appreciable addition to the cotton supplies. Full results cannot be expected earlier. The Association have now proved beyond dispute, that, given time and money, the Empire can produce all the cotton that Lancashire requires.

Reports on the progress of cotton cultivation in India were presented by Bernard Coventry, inspector general of agriculture in India, and other leading officials. They all agreed that the crop of India is capable of being largely increased. They confirmed the recommendations of the last Cotton Congress at Brussels, to the effect that central buying agencies should be established in the districts in India in which long-staple cotton is grown. At these agencies the cotton should be classified and sold to the consumers. So far the natives have received for long-staple cotton very little more than they receive for short-staple cotton, and on that account have had no encouragement to grow the better quality. The co-operation of the British Cotton-growing Association, who made representations on these lines to Lord Curzon in 1904, is suggested.

Encouraging reports on cotton-growing in the colonies of Germany, France and Italy, and in Asia Minor and Peru were presented.

Harvie Jordan, speaking as an American cotton planter, said that since the visit of the European spinners to the Atlanta Conference in 1907 American growers had adopted many reforms in the cultivation, harvesting, and marketing of cotton. The growers were fast learning that the spinners were not only their customers but their best friends, and extended to them a cordial invitation to visit the cotton belt again. To meet the views of the spinners in favor of the better handling of cotton, the growers propose to introduce a gin compressed square bale, which was in the nature of a revolution and meant, if successful, the abolition of the present antiquated, expensive, and wasteful methods. Naturally vested interests would place obstacles in the way of the new system, but the co-operation of planters and spinners must prevail. The change would save five dollars per bale, or on an average yearly crop sixty million dollars. Both spinner and grower were interested in securing that economy.

In the concluding session an Austrian delegate, Herr Kuffler, presented a report on the varying cost of fire insurance. He pointed out that there was difficulty in arriving at true comparisons of the varying amounts of premiums in the various countries, as the amounts were arrived at on entirely different principles, but the difficulty had been overcome. He found that, taking a sprinkled fire-proof mill of the value of $635,000, the cost of insurance in England under the mutual system would be $900, in France $1,000, in Germany $1,150, and in other countries more. There was no irremovable difficulty in the way of the establishment of mutual insurance companies on the Continent or the establishment of an international re-insurance scheme, which was their ultimate object.

Herr Kuffler also gave an account of conferences which he and Mr. Macalister (England) had had with Cotton Exchanges of Liverpool, Havre and Bremen about the better baling of cotton and the excessive damp in cotton. The Exchanges agreed that it would be desirable to introduce a new contract under which an allowance would be made for the actual tare on each bale instead of the fixed six per cent. tare which was now customary. The principle of the fixed tare had led to the addition of unnecessary weight, thereby increasing the freight. As to dampness in cotton, the Liverpool Exchange approved of having the cotton scientifically tested for dampness, but the other Exchanges strongly objected, on the ground that in the event of the presence of damp being proved they would be unable to get redress from the sellers on the other side of the Atlantic.

French delegate, M. E. Ribatto, introduced a scheme for the establishment of an indemnity fund for short time working among spinners using American cotton. He said the present crisis in the trade was one of the worst for a quarter of a century, and proved the necessity for an organization sufficiently powerful to fight wild speculation, which knew no limit. The only weapon which spinners possessed for checkmating the disastrous prices of raw material was short time, and this would never be of sufficient efficacy if it was not decided upon at the right moment by 80 or 90 per cent. of the hundred million spindles using American cotton. He recommended an indemnity fund,

raised by levy, the fund only to be used in case of a generally recognized shortage of American cotton. All causes of short time except shortage of cotton had no common point of interest, and should not be accepted.

A number of important resolutions passed by sectional meetings on previous days were unanimously adopted. The Congress recorded its opinion that the state of trade warrants the introduction of international short time working, and requested the sixteen affiliated countries to take the question in hand without delay.

The International Committee was requested to make a scientific investigation of the extent to which moisture is added to yarn by the varying atmospheric conditions in varying countries, and the Congress also urged the adoption of one uniform yarn contract. A strong protest was passed against the attitude of the Liverpool, Bremen and Havre Cotton Exchanges on the question of damp in cotton, and the Congress expressed its determination to secure fair treatment in this matter. It recommended English, German and French spinners' associations to discuss the question with the Cotton Exchanges of Liverpool, Bremen and Havre respectively, the object being to secure for the spinner a fair share in establishing the rules under which he has to buy. The Congress recommended its members to purchase at least a portion of their cotton on the basis of net weight contract, affirming that this is the only way in which the American planter can be induced to adopt a system of baling cotton which reduces the tare to the smallest proportions. It was decided to urge countries which have not established mutual fire insurances to continue their propaganda, the ultimate aim being the establishment of an international reinsurance company.

An invitation to hold the next Congress in Holland was accepted. Enthusiastic votes of thanks were passed to the Spanish and Portuguese Governments, local authorities and cotton associations for the unbounded hospitality which has been extended to the delegates.

Sir Charles Macara, interviewed at the close of the Congress, said: "Reports presented to the Congress from all parts of the world agree that the cotton trade everywhere is suffering from depression owing to the high price of raw material and the diminished demand which that high price carries in its train. No country working alone can hope to provide the remedy. Even England cannot, though she has more than one-third of the cotton spindles of the world. The only way in which to bring about a better state of affairs is to establish unity of action amongst all cotton-manufacturing nations. That unity our Federation has achieved. The Barcelona Congress provides the proof. As this Congress has shown, in the seven years of our existence we have grown enormously in strength and in power. There is abundant evidence that in all parts of the world in which cotton is growing or marketed our influence is recognized and our requirements are studied. The planters of the Southern States of America for example have shown themselves willing to accede to our recommendations. They are seeking our co-operation in reducing the enormous charges which accumulate during the process of transferring the cotton from their plantations to our mills, and they will not seek in vain. In many ways we can help them just as in many ways they can help us.

We desire that they shall have a fair return for their labors just as we desire a fair return for our labors. Anything which unnecessarily increases the price of cotton is bad both for them and for us, and that there are unnecessary increases nobody can deny. The main business of the International Federation is to reduce them and eventually to abolish them. If our work should continue to be as successful as it has been we shall succeed, and shall thereby effect a saving of incalculable magnitude. We are doing all we can, also, to encourage the extension of the area devoted to the cultivation of cotton, and encouraging reports on this subject came to the Congress from all the European countries which possess colonies in those parts of the world in which cotton can be successfully grown.

LETTER FROM HARVIE JORDAN.

In connection with the above subject the following personal letter from Harvie Jordan will be of interest to both producers and spinners of American cotton:

GRAND HOTEL D'ANGLETERRE,
6, 7 and 8, Cours Boieldieu,
Tel. 53. ROUEN.
May 17, 1911.

L. L. ARNOLD, Editor COTTON,
Atlanta, Ga.

Dear Mr. Arnold:

Great interest was evinced by the delegates from the different countries, about 400 of which were present at the Congress of the International Federation of Master Cotton Spinners at Barcelona. Not a single American spinner was present, however, and Sir Charles Macara appeared to regret deeply that the American spinners did not affiliate with the European federation. I delivered my address on the second day of the conference and the delegates appear to be taking deep interest in co-operating for the purpose of bringing about the needed reform in baling and marketing American cotton.

Two of the most important resolutions passed by the Congress and which were adopted by a unanimous vote, are as follows:

"Resolved, That this Congress confirms the advantages resulting from the net weight cotton contract and urges the members of each affiliated association to buy at least a portion of their cotton requirements on its basis, the Congress being of the opinion that only by the adoption of such contract can the American cotton producer be induced to adopt the new system of baling and handling cotton."

"Resolved, That this Congress is of opinion that the state of trade warrants the introduction of International short time working, and requests all the affiliated associations to take the question in hand without delay."

The Congress will not meet again for two years. The next meeting will be at "The Hague" or "Amsterdam" in Holland. The spinners association of Barcelona gave numerous elaborate banquets, etc., which were greatly enjoyed by the delegates.

I am guest here today of the Rouen spinners and of the Lille spinners next Friday and Saturday. The French spinners are deeply interested in pushing the reform in baling and developing direct trade as closely as possible between the producers and consumers. Next week I will meet with the Manchester Cotton Spinners' Association at Manchester, England. My visit so far has been a very delightful one and in every respect entirely satisfactory.

With kind regards, I am,

Yours truly,
(Signed) HARVIE JORDAN.

Mill Conditions and Market Reviews.

SOUTHERN MILL SITUATION.

(Special Correspondence.)

The principal interests among Southern mill men during May was the American Cotton Manufacturers' Association convention at Richmond and the proposition advanced by Paulson and Underwood, of New York, and Robert Rinehardt, of Lincolnton, N. C., to form a $35,000,000 yarn mill merger. These were the outstanding events of a month, otherwise characterized by dullness and unfavorable conditions.

The proceedings of the Richmond meeting are covered elsewhere. Regarding the 1,000,000 spindle Southern yarn mill merger, it would require a seer to foretell the outcome of this scheme. According to New York papers the merger is a certain thing, Mr. Underwood having declared in interviews in New York, since his return from the South, that over 600,000 spindles were already signed up and that three large banks had agreed to handle the issue of $10,000,000 in bonds. When in Charlotte the last time Mr. Rinehardt assured your correspondent that the merger was a sure thing, stating that there was already sufficient assurance from Southern yarn spinners to make it certain.

The general proposition is this: The merger corporation is to issue $10,000,000 in bonds which will be offered at 82½. Five millions of this sum will be used for cash payment of mill properties and the other five million will be used as a working capital. It is proposed to issue $12,500,000 common and $12,500,000 preferred stock, the promoters to receive 10 per cent. of common and preferred, or in the neighborhood of $2,500,000 for effecting the merger. A selling plan is to be decided upon later. The general plan, so far known, was set forth in a letter signed by Mr. Underwood and sent to Southern manufacturers.

At the meeting held in Charlotte, when the project was first broached, there were 412,000 spindles represented in person. The majority had come in answer to a personal invitation of Mr. Underwood to meeet him and hear his proposition. Before the last session many had left, and several stated their reasons for not favoring the project. These reasons differed widely. Many spinners who have had fairly good sailing during the past two years of depressed trade conditions objected to putting their property in on a parity with other properties in not so good financial condition. This is one objection.

Another is against the proposed valuation per spindle. It is pointed out that some of the best mill properties in the country have not such a high valuation as $35 per spindle, the basis upon which the proposed merger would be formed. Spinners think that upon such a basis there would be scant chance of dividends and they consider the entire proposition unsound and uncertain.

As a general rule the Southern spinners have courteously received the promoters, and carefully gone over with them their proposition. Their refusal to enter, if made, will be because they do not approve of the general plan. But whether this merger goes through or fails, it can be said that Southern manufacturers are not hostile to the general merger idea. In fact the plan of combining properties, to improve financial ability, promote economy in management, provide better selling arrangements and open new markets is one which is gaining in favor. Already mergers representing almost thirty millions have been perfected in the South, and other gigantic combinations are freely talked. Among the largest projects is that proposed by the Dukes to form some plan of handling the output of exporting mills, the object being to revive trade in the Orient.

A cable from China states that already agents of the Dukes are making efforts to rebuild trade with the Southern states. During the past two years very little goods have been sold to China by Southern mills. The falling off in demand has amounted to $16,000,000 or more. It is understood that the Loray mills, of Gastonia, N. C., have recently sold a large amount of goods to China, and that the Duke agents are making rapid headway in their efforts to bring Southern made products back into favor. The general plan is to establish 60 or more cloth depots in various parts of China, and to keep agents on the ground whose business shall be to study the demands of the trade, with regard to weights, specifications, etc. It is believed that by following the plan pursued by the American Tobacco Co., the trade once held by the South can be restored.

Whether the scheme of the Dukes, when promulgated, will be to combine Southern exporting mills into one gigantic merger, or merely to form a general selling agency to handle their output is not known. It is generally believed, however, that exporting manufacturers will support the general plan and much interest centers in the final outcome of the proposition, which, to date, has only been partially announced. If a feasible plan is evolved to merge Southern yarn mills it is likely that it will meet with favor, for conditions at present are such as to create a willingness to fall upon almost any solution which offers promise of remedying conditions.

A great many manufacturers have freely admitted, however, that the Underwood merger would not gain their support. And speaking of mergers, Governor Cole Blease, sometimes jocularly known as "Coal Blaze," who since his entry into office has fired several thousand notaries public, reprimanded the Supreme Court and Legislature and generally added to the gaiety of life in South Carolina, has issued a pronunciamento against the mill merging industry, as practiced in his State.

"It is safer," says Governor Blease, "for the authorities to take charge of the matter now than to wait until, like the Standard Oil case, the people of the United States have to appeal to their Supreme Court to relieve them from the burdens which will be brought upon them, not only in South Carolina, but in the entire South, by this merger business."

With this mild preliminary, the Governor tackles the subject in dead earnest and continues:

"I am receiving many letters and personal congratulations approving my course in calling attention to the dangers of the mill merger. If the mills are in such a

deplorable condition financially, it is strange to me that the stock is held above par and then you can hardly buy it; further every six months the mill people are delighted to publish what high dividends they are paying. This seems to me to be prosperity, and no cause whatever for reducing the wages of the poor people, who are making the money for them, or for closing down two or three days of the week and depriving them of work, which sometimes causes suffering.

"Demagogues and politicians may not be able to move the wheels in factories, but I have an idea that if some of them were to make an appeal, they might be able to cause a good many of the wheels to stop, particularly when they convince those who are turning the wheels that they, at the cost of their children's health and lives, are making some other people rich.

"E. A. Smythe, in his interview on the merger used the word 'sequence.' When some people see the injury that this mill merger will do, then possibly they will see what a 'sequence' is. I think that if the records are examined they will show that a resolution was introduced at the last Legislature to look into this mill merger, but was not acted upon. It is not a personal matter, but one in which all people, who are not controlled or owned by mills should be interested, and the farmers and laboring people particularly. The newspapers, as usual, may try to cloud the issue by lying on me, or repeating the lies of others, but the people are on to the newspapers, as was shown last September."

This little pleasantry with regard to the newspapers may be explained by stating that scarcely without exception every newspaper in South Carolina opposed his election.

The Supreme Court of South Carolina has handed down an important opinion with regard to the sale and delivery of cotton. In short, the Court holds that no cotton may be sold in South Carolina unless the *bona fide* delivery of the cotton is intended. Delivery is necessary to make the contract effective. The decision upholds the circuit court judge who overruled the demurrer in the case of Mayband and Company vs. F. M. Rogers, of Florence, S. C. Amount involved was $17,187.17, and the case is remanded back to the Florence court for trial on its merits. In the two cases reviewed during the date named for delivery cotton was selling at a figure very much below that existing when delivery was finally offered. In the second case contract called for 500 bales to be delivered in Florence between September 15th and December 1, 1909, at 11½ cents. It is alleged that market price of cotton on December 2nd was 13½ cents and damages in the sum of $5,625 were claimed.

Another interesting case has been decided in South Carolina when Cooper and Griffin, cotton dealers of Greenville, S. C., were awarded $5,650 over J. M. Pitts & Bro., of Clinton, S. C., in common pleas court at Laurens, S. C. The decision related to contracts for future delivery and held that such contracts at a specified price are valid and cannot be broken either by the farmer or his agent.

During the past few days some improvement has been shown in market conditions, with a perceptibly stronger undertone and slightly better prices. However, on the whole May has been characterized by unfavorable conditions, and the situation is not greatly unlike that existing during preceding months. Curtailment of production has been heavy, and it is generally believed that short time policies will be pursued throughout the summer, unless the unexpected happens, and a return to something like normal conditions is brought about. All indications point to a bumper crop, and manufacturers are hoping that with cheaper cotton they may be able to reach that point where full time operations can be carried on without resultant loss. It is hardly believed that any material change will occur before fall, and in the meantime mill men will meet the situation as best they can, curtailing when forced to do so, and running when business justifies such course.

NEW ENGLAND MILL SITUATION.

(Special Correspondence.)

The month has seen an improvement in the demand for cotton goods and at the same time has witnessed a further curtailment of production in the largest mills. One of the strangest incidents in the history of cotton manufacturing in this section occurred at Fall River. The owners of the American Printing Co., who also own the Fall River Iron Works mills, (14,000 looms), appeared in the markets as buyers of four constructions of narrow print cloths, cleaning up spot stocks here and in the South, available at the then current prices, and based on 3 9/16 cents for regulars. After this operation was completed, notice was given that beginning on May 22, and continuing for an indefinite period, these mills would be operated alternate weeks, only.

It became known in consequence of a statement of the owners of the property that this policy of purchasing cloths and at the same time stopping mills owned and controlled by the buyers, was adopted because print cloths were cheaper in the open markets than this well regulated and modernly equipped plant could make them. A shrewd Southern manufacturer of print cloths who happened to be in the New York markets a few days after these facts became generally known touched the quick of this abnormal situation in manufacturing and merchandising when he said: "If the Fall River Iron Works mills can afford to shut down because the owner can buy goods cheaper than he can make them he can't have my goods until he pays more for them. I'll shut up shop and wait along with him."

To other buyers this abnormal situation, made clear in such an unusual way, was a signal for the beginning of operations in gray cloths which have continued to broaden up to this hour. Slowly but surely the market demand and market prices have been improving, although at this time goods are still selling much below the cost of replacement based on 16-cent cotton.

In another quarter of the market action of a somewhat similar character was taken emphasizing the unbalanced relation of cotton and cloth prices. The Amoskeag Mfg. Co., Manchester, N. H., which is the largest single textile plant in one centre in the world, gave notice of an intention to close from May 27 to June 5, although it is well understood that up to the moment of giving notice, all the machinery was employed on orders. It is expected that this great plant will be closed again for a week about July 4, and again about Labor Day. The disparity between the cost of the raw material and the selling price of the manufactured product accounts for the shut down, and to some extent, also, the fact that good spinning grades of cotton are actually scarce, can be held responsible.

Aside from the curtailment in these two large units of production, curtailment has increased, Fall River is now operating hardly 55 per cent. of its machinery. Recently published statistics from this centre show that nearly 4,000,000 cotton mill spindles can be run when times are good, and to say that 1,800,000 are actually idle means a tremendous restriction in output.

The orders for goods that have come forward have not yet taken care of the possible production even based upon 55 per cent. of the spindleage installed, yet the strong feature now apparent is that many contracts for goods are being accepted and placed, thus laying the foundation for a steadiness in values that has not been seen during the life of the current crop. During the week that the American made its large purchases the sales reached nearly 400,000 pieces and since then they have averaged about 200,000 pieces a week. New England printers have been liberal buyers of Southern goods in the same period and so too have some of the New England bleachers. At this time the market is on a stronger basis than at any time this year.

Prices have gained a little and the advance would be regarded as quite respectable had values not gone so far below the cost of manufacturing.

About 3,000 bales of standard drills were sold for export to India at 8 cents, in the course of the month and there was a fair business done on prints, and denims for export. Four-yard sheetings have advanced to 6¼ cents but on the whole the movement in the coarser lines has not been so strong as in other directions.

While there was no change in the prices named on bleached sheetings sold under the oldest tickets in the market, advances of ⅛ cent a yard were secured on ¾ and ⅞ bleached cottons for the underwear, and jobbing trades. Shirt manufacturers were better buyers of bleached cottons toward the end of the month. Staple prints were offered for fall, with October dating, about May 15, and from that time orders began to increase steadily and moderately. The staple printers are operating about 60 per cent. of their machinery and are not making deliveries on percale as rapidly as some buyers would like to see. The managers of the large fine and fancy goods print works report good orders being placed for next spring's merchandising. Many novelties will be shown and the belief is strong that next season will be a greater printed goods year than this one has been.

Toile du Nord ginghams were reduced during the month to 9½ cents a yard and later, seven thirty four and Lancaster staples were reduced. This action was not followed by changes in any other lines. It was explained that prices on these cloths were out of range with other prominent makes and jobbers were not able to move them freely. In the course of the next few days the dress ginghams in 32-inch widths made by the Amoskeag Co. will be priced for the season. Trade in staple and dress ginghams has held relatively better than most other lines. The demand for staple tickings has kept up steadily and there are no accumulations. Denims, cheviots, coverts, and other heavy weight colored cottons have not done so well.

Some re-orders have been received on domets and other napped cottons from jobbers who did not order fully at the opening of the season. The prices paid were fully as good as those named at the opening. There has been considerable haste in securing prompt deliveries of napped cottons now on order and the belief is general in the market that supplies of these cloths are not likely to be abundant during the fall merchandising season.

The leading quilt mills have covered well with orders for fall. These mills have run steadily through the year thus far. It is understood that prices have not been especially remunerative as competition for business has been keen and buyers were not willing to meet the prices demanded by the high cost cotton required in the better lines.

In the last two weeks of the month there was an active demand for light weight underwear. Lines like the Otis and Lawrence were in very active call and orders now on the books together with business in sight will keep this grade of mills well employed during the summer. The hosiery mills that are equipped to make the very sheer lines now so popular have been driven and many of the best silk lines have sold freely.

There has been little or no change in the hours of work in the large cotton machinery plants. Many orders are on the books yet to be delivered but there is little rush to secure deliveries and the new mills that are under way are not being rushed to completion at all. There are few important improvements in sight.

Mill stocks have not declined materially. In fact some of the Boston stocks have advanced a trifle on recent sales, notable instances being the case of the Amoskeag and Salmon Falls Mfg. Co. In the latter case a change in management has been made and some extensive improvements that have been under way are rapidly reaching a point where very good manufacturing results are looked for. The Amoskeag Co. is undertaking a great deal of novel and important welfare work on its plant as well as establishing departments looking toward greater efficiency in the manner of employment and in the direction of employes.

While the market has been slowly getting better and prices have been improving, it is still far from the fact to say that New England mill interests feel comfortable. Most financial heads of plants believe that the worst of the general business depression has passed yet they look for very slow recovery and they anticipate prolonged complications growing out of the attempt to revise the tariff. It is also true that a great many operatives are idle or working short time and this reduction of purchasing power in the mass of population directly tributary to the manufacturing centres increases the dissatisfaction that is felt.

The views of manufacturers concerning cotton have not undergone any change from last month. It is the popular theory that speculation alone accounts for the sustained high price of the staple but manufacturers are inclined to believe that the market is cornering itself and prices are likely to remain very high for the balance of the season.

An American consul in the Levant has been requested by a local firm of prominent importers to place it in communication with American manufacturers and exporters of cotton T cloth and prints. Samples, price f.o.b. New York, discounts and terms, as well as all information relative to packing, etc., should be forwarded at once, as there is a great consumption of these articles in the country in question, the markets of which are flooded with Italian and English goods. Correspondence may be in English. Interested firms are also requested to forward their printed matter and price lists to the consulate submitting the report. For further information address Bureau of Manufactures, Washington, D. C., and refer to File No. 6677.

MONTHLY REVIEW OF THE COTTON MARKET.

BY H. & B. BEER, NEW ORLEANS.

Owing to the failure of the South to produce sufficient cotton to meet the requirements of the world during the past two years, and owing to unfavorable climatic conditions and the boll weevil, manipulation in spots and cotton for future delivery is in evidence again for the third consecutive season. The average size of the American crops of the past two seasons, was about 11,305,000 bales, whereas the average consumption of American cotton for the past two seasons was about 11,887,000 bales; the deficit having been made good by the large reserves carried over from the big crop of 1908, when the yield was 13,825,000 bales.

Realizing the need of a very large crop by the world for next season, the South this year is making every endeavor to produce a record breaking yield. To that end the largest acreage in the history of the staple has been pitched in the cotton belt this Spring, and under conditions unusually favorable for a good start. The increase in acreage over last year's area is estimated at about 1,700,000 acres, or a total acreage of about 35,089,000 acres, against 33,418,000 acres planted one year ago, which would represent an increase of about 5 per cent.

Unlike last year Texas has been favored with generous, well distributed rains, especially the arid sections of the western part of the State, which means so much to the making of a good crop in that State. The April average rainfall in Texas was 4.88 inches, or 1.80 inches more than the normal, and the total average precipitation for 5 months ending May 1st was 12.47 inches compared with 9.06 last year, 4.83 year before last and 10.44 in 1908.

There is said to be a large increase in the use of fertilizers in nearly all sections of the South, especially in the East gulf and South Atlantic states, sales of mules are reported on an extensive scale, also of improved farm implements, and it is said that modern methods of cultivation are being followed closely with the view of obtaining the best results.

In regard to the general complaint of too much rain in April, we expressed the opinion in our review of last month that should good weather be had during the month of May, it would prove to be of material benefit to the growing crop, as the rains were not excessive in April, except in scattered localities of the Southwest, and that the redeeming feature of the weather this Spring was the absence of cold weather during the planting season, there being no necessity to replant, except in widely scattered spots.

During the month of May the weather has been generally favorable, mostly dry and warmer, which has permitted cleaning fields of weeds and grass, and it is said that planting is all but finished with no loss of acreage, a large portion of which is usually abandoned for one reason or another. At the moment, crop accounts could hardly be better, and, instead of the season being late by one to three weeks, as was generally reported sometime ago, latest advices are to effect that the start is fully up to the normal.

The market has received a little set back of late notwithstanding stocks at all United States ports and the 30 counted interior towns to be about 210,000 bales less than holdings of last year, 549,000 against 759,000, and the world's visible supply of all kinds to be 3,118,000 bales compared with 3,131,000 one year ago. The bull interests are not usually disposed to run prices up and take large blocks of cotton on contracts at abnormally high prices, and as it is said that new crop cotton is opening already in extreme Southwest Texas, in the lower Rio Grande Valley where picking will soon commence, and as the trade is looking for a bearish Government Bureau crop condition and acreage report on June 2nd, liquidation of long contracts has been in process of late and promises to continue in advance of the issuance of the Bureau report, as crop accounts continue favorable, although the Carolinas are complaining of dry weather, while Western Oklahoma is complaining of a threatened drouth.

THE KNIT GOODS MARKET.

The market for knit goods during the past month has showed a continued quiet over the early weeks with slight gains toward the later part of the month as the weather warmed up. This warm weather has produced more duplicate orders in underwear and has brought more attention to the high priced materials as well as to the cheaper grades. Orders, however, are not in any way excessive, and while the underwear manufacturers are feeling more encouraged they are hoping for not only a larger number of orders, but orders of a larger size.

In the hosiery market the buying was a trifle spotty but on the whole the latter part of the month indicated a better tone throughout the trade. The late spring weather in many parts of the country has delayed the ordering of light weight goods, but it is the general opinion that retailers will take summer hosiery, probably clear into July.

The consumer still indicated his preference for silk hosiery in all the grades from 50 cents to $1.50 and in many sections it has reached the stage where it is even more than a fad. The best sales being made around staple blacks for both men and women. There has, however, been some call for whites and the demands for tans have improved steadily. There was quite a heavy sweater demand from the West in the early part of the month and there has also been considerable demand for "seconds" in both women's and men's half hose. There was also an unexpected increase in the call for jerseys for youth's wear.

The position of fall underwear seems to be improving as the year advances and many underwear manufacturers are beginning to be optimistic on the production of fall goods. Many cancelled orders of ladies' sweaters and similar lines have been reordered and the prospects are considerably brighter than they have been for some time past in those lines.

The summer underwear situation, however, is not up to its usual standard and it probably needs more pronounced warm weather to bring this line into its usual prominence. There is some question in the minds of manufacturers and jobbers as to whether the popular taste is going to run in the direction of knitted fabrics, or woven goods for the lighter weight constructions and because of this, orders are necessarily of a tentative character.

In spite of the fact that orders are increasing in both the hosiery and underwear fields, the prices still remain at a very low level and from that point of view the outlook is not any more encouraging than for some time past.

There are rumors to the effect that an effort will be made at the National Convention in Philadelphia to induce further curtailment on the part of manufacturers, but only the future can tell just what steps will be taken or just what ideas may be carried out. With everybody eager to sell, the buyer holds the "whip hand" and the salesman can only take what is offered or hold his goods. One encouraging feature in the market is the stronger position of the general market since the decision in the Standard Oil case was rendered and the general bright outlook for most of the crops.

THE YARN MARKET.

The yarn market for the past month has been practically a repetition of former months and still continues very flat. Spinners, however, are holding out more firmly for better prices and indicate decisively that they prefer to shut down their mills temporarily, or curtail part of their production, rather than manufacture any further yarns at a loss. Some knitters show an inclination to cover a little closer for the late months of summer and early fall, probably because present indications show better prospects for business in their lines around that time. The weavers are still buying from hand to mouth and miscellaneous buyers are confining their business to whatever needs may be determined by the orders in hand for their own product.

The early part of the month saw very little change in either the Philadelphia, Boston or New York markets for cotton yarns other than the increased firmness in spinners prices. It is admitted generally that the speculative features of the market, not only in cotton but also in yarns is retarding general business conditions and creating a feeling of uncertainty on the part of all legitimate traders. There was quite an increase in demands for Egyptian yarns and prices were advanced from two to three cents a pound. There were some good sized sales of combed yarns during the period, but they went for prices that were decidedly in favor of the buyer.

The middle of the month showed prices slightly firmer and a smaller quantity of Southern yarns coming into the market. Sales continued on a hand to mouth basis particularly to the weavers, while underwear manufacturers were not inclined to look with favor on placing contracts for fall deliveries at this time. They were rather uneasy over the situation in the cotton market and were inclined to believe that if they gave orders at present prices the speculative feature in the market might cause lower prices before they had half filled their orders. Taken all in all there was very little life apparent and very few sales for future delivery reported. There were a considerable number of inquiries in the Boston market and many small sales for near delivery, which was accepted as evidence of the fact that stocks with yarn users are very low and that any improvement in the goods market must be quickly reflected in the increased demand for yarns.

The latter part of the month showed a slightly better tone in business for fall shipment. Spinners are generally asking about half a cent more for spot goods than buyers are willing to pay, but there have been enough transactions made on terms to indicate that when yarns are needed bad enough, the buyers are willing to pay the price. Knit goods manufacturers showed an increased disposition to buy and while a sale of 150,000 pounds of 24's single cone yarns for fall delivery was reported to have been made at 23 cents a pound, a prominent mill refused an offer to buy 200,000 pounds of the same grade yarn at 23⅝ cents.

Southern spinners are complaining that quotations in the New York market are anywhere from ½ to 1½ cents below actual sales which they have put through at their mills. Members of the trade in New York, however, state that small sales at the mills, of special yarns do not make a market at the present time. With the spinner holding out for prices well above quotation and buyers not over anxious to purchase even at open market quotations, only one possible result remains and that is a flat or inactive market. Should Southern spinners finally decide on drastic curtailment during the summer months the users of yarns are likely to find themselves in a tight position before they can again get sufficient yarns to fill their requirements. They are being warned by the selling agents of the mills that such steps are liable to take place and whether they will make any effort to discount the situation is a problem for the future to disclose.

The following are the New York quotations for the end of May:

SOUTHERN SINGLE SKEINS

4s to 8s	21 @21½	20s	22½@--
10s to 12s	20½@21½	22s	23 @--
14s	22 @--	26s	24 @--
16s	21½@--	30s	25 @--

SOUTHERN TWO-PLY SKEINS.

4s to 8s	20 @21½	36s	29 @--
10s to 12s	21 @21½	40s	30½@31
14s	22½@--	50s	35 @36
16s	22 @22½	60s	43 @44
20s	23 @--	3-ply 8s upholstery	21½@--
24s	24½@--	4-ply 8s upholstery	21½@22
26s	24½@24¾		
30s	26 @--		

SOUTHERN SINGLE CHAIN WARPS.

10s to 12s	21½@--	24s	23½@24
14s	22 @--	26s	24¼@--
16s	22½@22¾	30s	25 @--
20s	23 @--	40s	30 @--
22s	23½@--		

SOUTHERN TWO-PLY CHAIN WARPS.

8s to 10s	21 @--	26s	24 @24½
12s to 14s	22 @--	30s	26 @27
16s	23 @24¼	40s	31 @--
20s	23½@24	50s	36 @--
24s	24½@--		

SOUTHERN PEELER FRAMES CONES.

8s	21 @--	18s	22¾@--
10s	21½@--	20s	23½@--
11s	22 @--	22s	23½@--
12s	22¼@--	24s	24¼@--
14s	22¼@22½	26s	24½@--
16s	22¾@--	30s	25½@--

The commencement exercises of the Pennsylvania Museum and School of Industrial Arts will take place at the Broad Street Theater in Philadelphia on Thursday evening, June 1st, 1911, at 8 o'clock. An address will be delivered by Charles Clark, Esq., on the subject of "The Man Who Knows How." Immediately following the exercises the annual exhibition of student's work in both the school of Applied Arts and the Philadelphia Textile School will be on view in the school building at Broad and Pine streets. The exhibition will be open to the public from 10 a. m. to 5 p. m. Friday, June 2d to Saturday, June 10th, inclusive.

The commencement exercises of the Class of 1911 at the Lowell Textile School will take place on Friday, June 2d, at 2:30 o'clock p. m., in the assembly hall at the school. The school will be open for inspection after the exercises.

COTTON MANUFACTURING.

WEAVING TERRY CLOTHS.

(*Contributed Exclusively to* COTTON.)

BY FRED WILLIAM HORROCKS.

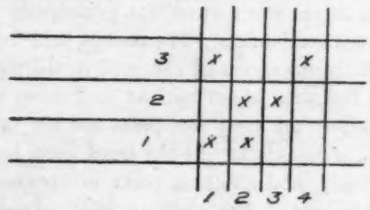
These extremely useful and often beautiful fabrics constitute quite a distinct class of woven textiles, differing widely from plains, figured goods, crossed yarn cloths, and every other kind. In terry cloths the looped yarn threads form the principal feature, these loops appearing in some cloths on one side only, but in most cases on both sides of the cloth. These loops give the cloth a very spongy, absorbent character, so that terry cloths are used as Turkish towels, bath mats, scrubbers, flesh gloves, and often for more ornamental purposes. These cloths are generally woven all cotton, but in some cases linen yarn is used for the loops and cotton for the ground cloth, whilst sometimes both loops and ground are of linen.

Terry cloths require two warps, one to form the ground of the cloth being very heavily weighted, the other warp for the loops being lightly weighted. As all the ground warp goes in comparatively straight, and the pile or loop warp is practically all used in forming the loops, it will be seen that much more terry yarn is required for the cloth than ground yarn; in fact, as much as nine times as much face or terry yarn as back yarn is often required. The quality and weight of terry cloth is to a large extent determined by the proportion of terry warp to back warp; but of course the proportion should be suited to the purpose for which the cloth is required. The greater the portion of terry yarn to ground yarn the softer the towel; while with less terry yarn a cheaper cloth is produced.

As regards the pattern or weave, the most common variety is on four ends and three picks; that is, the whole repeat is completed on four ends and three picks. Four healds are required, two for the ground yarn and two for the loop yarn. The ends are drawn in alternately, a ground end and a loop end, or two ground ends and two loop ends. The ground warp is slightly coarser than the loop warp, for instance 14's for back warp and 16's for face warp. These cloths are generally woven by means of dobby machines, except figured terry cloths, which require jacquard machines. The two back healds for the ground yarn are shedded opposite to each other, one being shedded—one up, two down; whilst the other is shedded, two up, one down. The two front healds for the loop yarn are also shedded opposite to each other, one being one up, two down; the other being two down, one up. The ground of the cloth is therefore practically of a plain weave and serves the purpose of keeping the loops from fraying out. In the case of a terry cloth with the loops on only one side, the ends of the terry warp can be drawn in on one heald; thus reducing the number of healds required to three; two healds for the back or ground warp, and one heald for the terry or loop warp.

The action of the reed has much to do with the formation of the loops in a terry cloth; in fact, it is the reed and the mechanism to operate it that are the principal features of a terry loom. The three-pick terry requires the reed to fall back from the fell of the cloth when beating up two picks, so that these two picks will be about half an inch from the cloth. The reed for the next pick is held firmly in its place and beats all three picks up to the cloth. As the reed pushes the three picks forward, the slack yarn of the terry warp is pulled forward, the weft slides along the tight yarn of the ground warp and secures the terry ends in the form of loops, either on both sides of the cloth, or on only one side, according to the shedding of the terry healds. In order to operate the reed in this manner, the upper rib of the reed is held securely in the sley cap, whilst the reed box, which holds the lower rib of the reed is a detachable part of the sley, somewhat on the principle of the ordinary loose-reed loom.

This loose reed box is secured to two or more arms on a shaft placed underneath the sley. On this shaft and projecting towards the front of the loom is a pointed tongue. The reed is pressed forward against the back of the sley by means of spiral springs acting upon the reed box. Immediately in front of this tongue is a projecting tongue or beater operated by a tappet. This tappet is sometimes at the end of the loom, and sometimes underneath the loom. For two picks, as the sley comes forward, the tappet beater is depressed so that it raises the tongue of the reed box shaft and allows the reed box and reed to fall back. On the third pick, as the sley comes forward, the tappet beater is raised, and pressing upon the upper side of the tongue of the reed box shaft keeps the reed firm and presses the three picks forward.



4 ENDS, 3 PICKS. *Nos.* 1 AND 3 FOR GROUND, NOS. 2 AND 4 FOR LOOPS. LOOPS ON BOTH SIDES OF CLOTH.

The size of the loops depends principally upon the space between the two slack picks and the fell of the cloth, and this space is determined by the lift of the tappet beater. Care has to be taken that the yarn from the terry warp does not come off too freely, and also that the back warp is very heavily weighted. Much of the success in terry weaving depends upon the sizing of the yarn, both of the ground warp and of the terry warp. In order to produce the loops and return them the yarn should not be sofe sized.

The quality of terry cloth depends upon the counts of yarn used; the number of picks per inch, and the amount of terry per inch. When we speak of a six to one terry, we indicate the length of terry yarn compared with the length of ground yarn; this being ascertained by cutting one of the loops and pulling the end out a certain distance, say one inch, and then measuring the length of the terry end pulled out.

The formation of the loops, which are the principal feature of these fabrics, is accomplished by the combined action of the weave of the cloth; the peculiar action of the reed, and the different tension of the face or pile warp and the ground warp. With regard to the first mentioned, the commonest type of terry is the three-pick, in which a

series of loops are produced across the cloth every three picks both over and underneath the cloth. The ends are on four healds and are drawn in either one and one, or two and two. A one and one draft means that a back and a face end are drawn in alternately, while a two and two draft is one in which two back ends and two face ends are drawn in alternately. When the terry is required to be on both sides of the cloth, the two terry healds are worked opposite to each other, the terry heald for the face being up two picks and down one pick; whilst the terry heald for the back of the cloth is down two picks and up one pick. The healds for the ground warp are also raised opposite to each other, and serve the purpose of operating the ground ends so as to enable the picks to bind the slack terry ends, and prevent them from being easily pulled out. In practical work, the best way to make a level terry cloth is to have the ground warp very heavily weighted; whilst if the terry or looping warp is too lightly weighted, the yarn may come off too freely, and the terry warp may not be properly bound into the cloth.

The regulation of the amount of terry is partially effected by the tension of the terry warp, but principally by means of the loose-reed mechanism. The reed is held firmly in the reed cap, but the lower rib of the reed in the movable box is allowed to fall back about half an inch when beating up for two picks, so that these two picks are not beaten quite up to the fell of the cloth. At the third pick, however, the reed is held rigid, and all three picks are pressed forward at once. This causes the weft to slide along the tight ground ends, and, being locked with the slack terry ends, pulls them forward, forming loops both under and over the cloth, accordingly as the terry healds are down or up.

Some cloths have the loops on only one side, the back of the cloth being plain. To make this cloth, the two terry healds must work together instead of opposite to each other, as in the previous case. One fault common to all three pick terry fabrics is that it is comparatively easy to pull the loops out when the cloth is in use. The best way to make the loops more securely interwoven is to alter the terry tappet so that it may enable the reed to fall back two picks and remain firm six picks. Sometimes the weave of the cloth is also altered, and the terry loops produced every four or five picks. Of course in this case more ends and picks will be required per inch in order to produce a well looped cloth, so that these four, five and six pick terry fabrics are more expensive than the three pick variety.

The mechanism for operating and regulating the loose reed is sometimes at the side of the loom; sometimes underneath the loom; while it is often very direct and simple in action, being attached to one of the sley swords. The original type consisted of a tappet under the loom which by means of treadles, operated an arm fixed to the reed box, so that every third pick the reed box was held firmly when beating up, but allowed to fall back when beating up the other two picks. Each mill where terry cloths are woven seems to have its own reed mechanism, and some have several types which are constantly the objects of improvement, or at any rate of alteration. Terry cloths are generally woven in dobby looms, as it is by the dobby that the various kinds of headings can be most effectively produced. These dobbies should be so arranged that two or more different weaves can be easily produced for headings, etc. For this purpose a cross border dobby is preferable, but one not too complicated. An ordinary plain terry cloth without headings may be woven in a tappet loom, but as this type of loom does not lend itself to a change of weave, a dobby is more suitable. Fancy or figured terry cloths require a jacquard to operate the loop warp, while the ground yarn is drawn in through healds. The jacquard enables us to produce very beautiful effects in terry cloths, especially when colored yarns are used.

Linen yarns are also used for both ground and loop warps, these cloths being used for hard work, such as horse scrubbers, bath towels, etc. Linen yarn not being so elastic as cotton, some difficulty is occasionally experienced with the back or ground warp which has to be heavily weighted. A cotton back warp with a linen terry warp gives very good results and is easy to weave.

COTTON MILL MACHINERY CALCULATIONS.

(*Contributed Exclusively to* COTTON.)

BY B. M. PARKER.

PART 4.

In looking at the gearing diagrams of the cards shown, it will be noticed that they are all very similar. In all cases a change from a small to a larger draft gear will drive the feed roll faster, feeding in more stock and thus decreasing the draft of the machine and increasing the weight of the sliver delivered. An opposite change would give opposite results In dealing with the draft factor of the cards the following rules apply:

Draft factor divided by the draft equals the gear to use

Draft factor divided by the gear equals the draft of the card.

In doffer speed gearing we find a similarity, about the only noticeable difference is in the gearing between the barrow pulley and the doffer. On all cards a change from a small to a large doffer change gear will drive the doffer faster, thus increasing the production of the card, by causing it to deliver more lengths of sliver, but not affecting the weight of the sliver per yard. This change gear is also called the production gear or the speed gear and in all cases directly controls the production of the card.

It will be understood from the above, that any desired change in the weight of the card sliver will be secured by a change in the size of the draft change gear, and any change in the total production of the card is by a change in the doffer change gear. The following rules for the use of the doffer speed factor hold good on all cards:

Speed factor, multiplied by teeth in change gear, gives the speed of the doffer.

The doffer speed divided by the factor gives the size gear to use.

The standard speed for the card cylinder is 165 revolutions per minute and in most cases they are run at this speed. The cylinders are built fifty inches in diameter and forty inches or forty-five inches across the face. The driving pulleys are made twenty inches in diameter. The draft of the card varies from eighty to 125, with 100 considered as an average draft. The speed of the doffer varies between nine and eighteen revolutions per minute depending upon the quality desired, the production needed, and the size of the doffer, which may be 24 inches, 26 inches, 27 inches or 28 inches in diameter. The use of the 24-inch doffer is considered out of date now.

The weight of the sliver run depends upon the internal conditions in the mill and the style or quality of finished product and may be anywhere between 35 and 70 grains per yard. Fig. 13 shows a diagram of the gearing of the Saco-Pettee card with a 27-inch doffer, made by the Saco-Pettee Co., Biddeford, Maine and Newton Upper Falls, Mass. Using our same method for figuring draft and working between the 21inch coiler calender roll and the

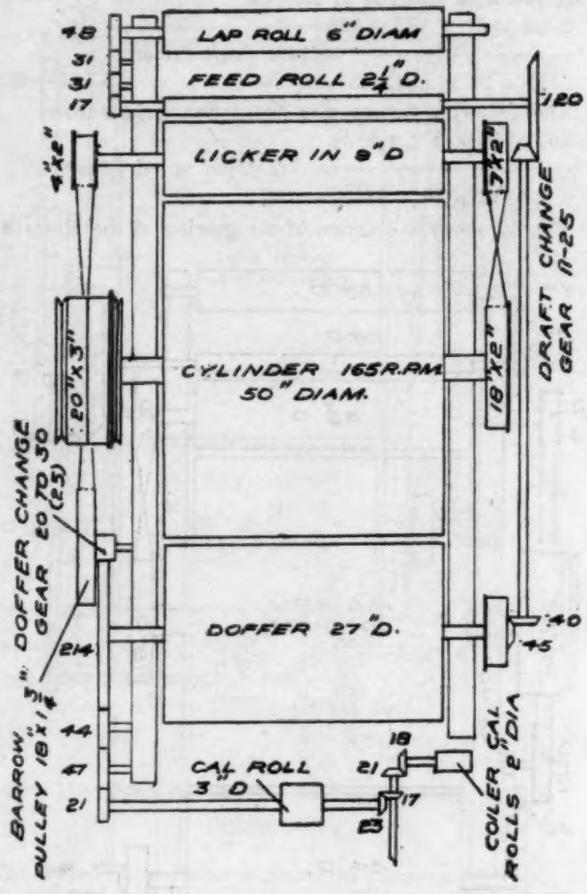


FIG. 13. PLAN OF GEARING ON THE SACO-PETTEE CARD.

2¼-inch feed roll, leaving out the draft gear, we get the draft factor as follows:

$$\frac{2 \times 21 \times 23 \times 214 \times 40 \times 120}{18 \times 17 \times 21 \times 45 \times x \times 2.25} = 1525.09 \text{ draft factor.}$$

$$\frac{\text{Factor}}{\text{Gear}} = \text{Draft.}$$

$$\frac{\text{Factor}}{\text{Draft}} = \text{Gear.}$$

In getting the speed of the doffer, start with the cylinder speed, which is 165 revolutions per minute and treat as in any ordinary speed problem, remembering that the product of the speed of the driver, multiplied by its diameter must equal the product of the speed of the driven multiplied by its diameter.

The following figures give the speed of the doffer:

$$\frac{165 \times 18 \times 4 \times 25}{7 \times 18 \times 214} = 11 \text{ revolutions per minute.}$$

To find the doffer speed factor, use same method as above, leaving out the doffer change gear which was a 25-tooth gear.

$$\frac{165 \times 18 \times 4 \times x}{7 \times 18 \times 214} = .44 \text{ doffer speed factor.}$$

$$\text{Factor} \times \text{Gear} = \text{Speed.}$$

$$\frac{\text{Speed}}{\text{Factor}} = \text{Gear}$$

There is always a slight draft between the coiler calender roll and the card calender roll, and also between the card calender roll and the doffer. This draft or tension is simply for the purpose of keeping the cotton tight and preventing undue sagging of the web or sliver at either place. Care should be taken to see that this tension is not too much, as there will be the chance of stretching the roving at places, which would make it uneven. This tension should be just enough to keep the cotton up.

The draft and doffer change gears are the only change gears on the card. There is usually some point between the coiler rolls and doffer where a change in gearing can be made to give the desired tension to the sliver.

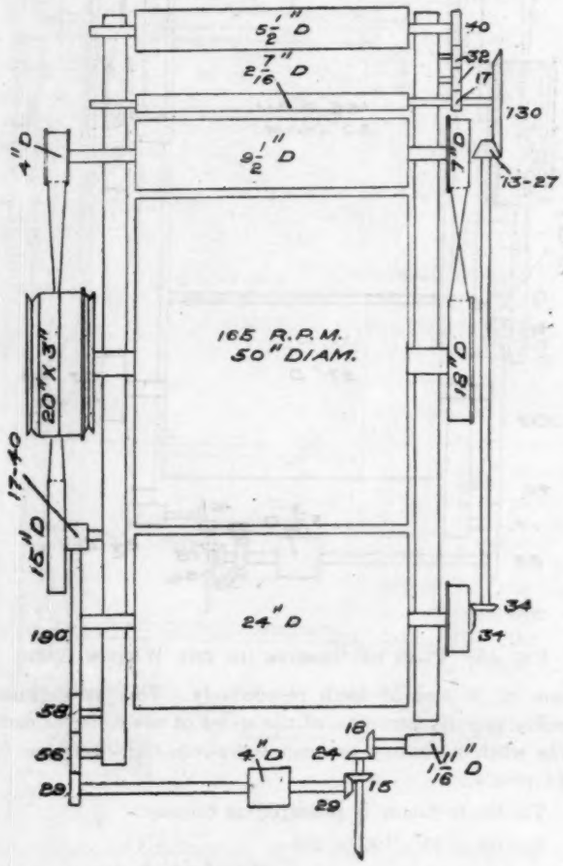


FIG. 14. PLAN OF GEARING ON THE MASON CARD.

In Fig. 14 is shown a diagram of the gearing of the Mason card with a 24-inch doffer, made by the Mason Machine Works, Taunton, Mass. Their 27-inch doffer card gearing is very similar to that shown.

The coiler calender roll is 1 11/16-inch in diameter and the feed roll is 2 7/16-inch in diameter. Reducing these two figures to the same terms, we get 27/16 for calender roll and 39/16 for feed roll and we can use the figures 27

and 39 for the diameters of the two rolls. With this in mind, the draft factor may be obtained as follows:

$$\frac{27 \times 24 \times 29 \times 190 \times 34 \times 130}{18 \times 15 \times 29 \times 34 \times x \times 39} = 1520 \text{ draft factor.}$$

To find the doffer speed factor:

$$\frac{165 \times 18 \times 4 \times x}{7 \times 15 \times 192} = .595 \text{ or } .6 \text{ speed factor.}$$

Fig. 15 shows a diagram of the gearing of the Whitin card with a 27-inch doffer, made by The Whitin Machine Works, Whitinsville, Mass. It will be noticed that between the upright shaft and the card calender roll there are two

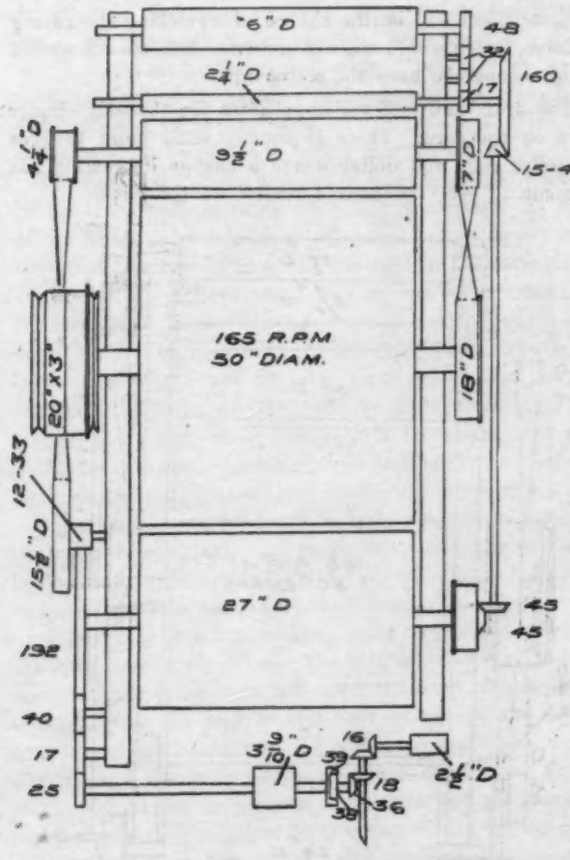


FIG. 15. PLAN OF GEARING ON THE WHITIN CARD.

gears of 39 and 38 teeth respectively. This arrangement readily permits variation of the speed of the coiler calender rolls when necessary to keep the sliver tight between the two points.

The draft factor is procured as follows:

$$\frac{2 \times 36 \times 39 \times 192 \times 160}{18 \times 38 \times 25 \times x \times 2.25} = 2242 \text{ draft factor.}$$

In the above calculation the two 16-tooth bevel gears on the ends of the upright shaft and coiler calender roll, and the two 45-tooth bevel gears on ends of doffer shaft and side shaft, have been left out as they would have no effect on the factor if used. Where two gears meshing together that have the same number of teeth appear in any calculation both can be disregarded. The doffer speed factor is obtained as follows:

$$\frac{165 \times 18 \times 4.25 \times x}{7 \times 15.5 \times 192} = .606 \text{ speed factor.}$$

In Fig. 16 is shown a diagram of the gearing of the Lowell card with 24-inch doffer, made by the Lowell Machine Shops, Lowell, Mass. This diagram is taken from the older model of card, their latest model card having a 28-inch doffer, the gearing of both being very similar. The draft factor is obtained as follows:

$$\frac{2.125 \times 31 \times 192 \times 120}{15 \times 30 \times x \times 2.25} = 1499 \text{ draft factor.}$$

The following figures give the doffer speed factor:

$$\frac{165 \times 18 \times 6 \times x \times 20}{7 \times 12 \times 40 \times 192} = .552 \text{ doffer speed factor.}$$

Fig. 17 shows a diagram of the gearing of the Howard

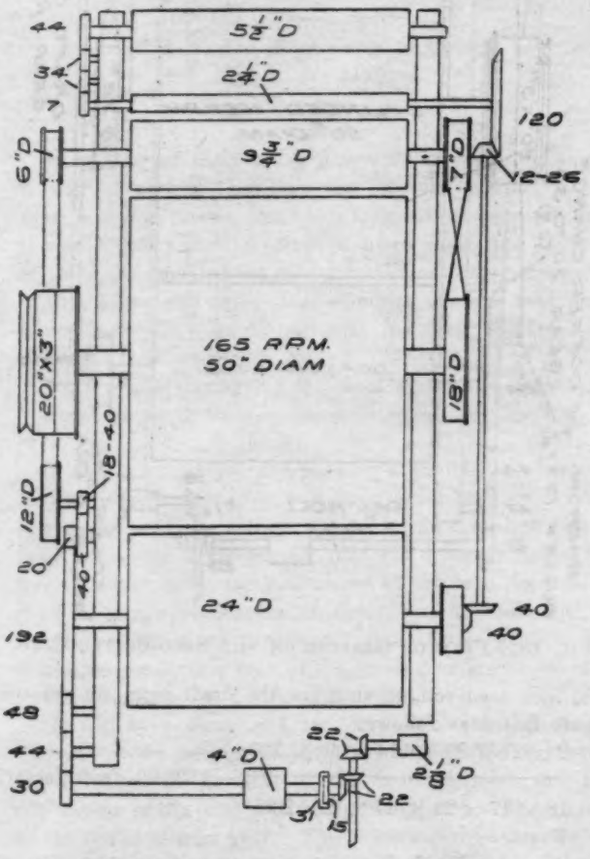


FIG. 16. PLAN OF GEARING ON THE LOWELL CARD.

and Bullough card with 26-inch doffer, made by Howard and Bullough, American Machine Company, Ltd., Pawtucket, R. I. This card is built with a 26-inch doffer only and the gearing is similar to the others. The draft factor is found as follows:

$$\frac{2 \times 25 \times 180 \times 120}{16 \times 19 \times x \times 2.25} = 1579.$$

The doffer speed factor is found as follows:

$$\frac{165 \times 19 \times 6 \times 26 \times x}{7 \times 9 \times 104 \times 180} = .414.$$

In Fig. 18 is shown a diagram of the gearing of the Potter and Johnston card with a 25¾-inch doffer, made by

Potter and Johnston Machine Co., Pawtucket, R. I. The following figures give the draft factor:

$$\frac{2 \times 32 \times 204 \times 13 \times 120 \times 50}{15 \times 32 \times 13 \times x \times 40 \times 2.25} = 1813.33.$$

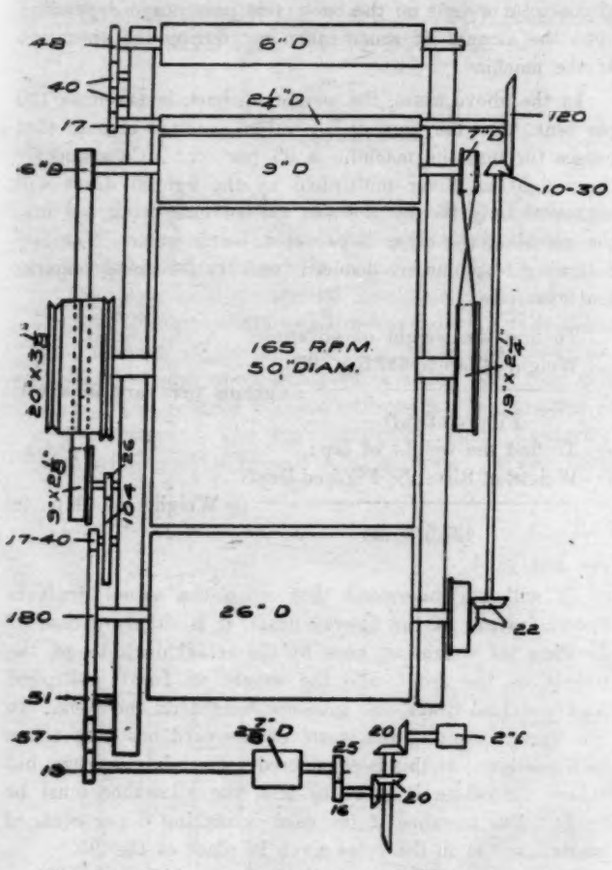


FIG. 17. PLAN OF GEARING ON THE HOWARD AND BULLOUGH.

The doffer speed factor is found as follows:

$$\frac{165 \times 25 \times 15 \times x}{13.875 \times 105 \times 204} = .208 \text{ or } .21.$$

The method used on these cards for driving the licker-in, doffer and flats all with one belt is shown in Fig. 19. The belt leaves the under side of cylinder pulley, goes over the licker-in pulley, then to the doffer driving pulley and around the doffer grinding pulley, then up and around the flat driving pulley and back to the cylinder pulley. When the card is working, the pulley on the end of doffer runs loose and serves only as a binder pulley to carry the belt down and out of the way. When grinding the card, this pulley is fast and serves to drive the doffer from the cylinder.

In getting the foregoing draft factors we have figured, in every case, between the feed roll and the coiler calender roll. In this way the total draft of the machine is obtained, with the exception of the slight tension always present between the feed roll and the wooden lap roll, but this is too small to affect the results to any great extent.

As mentioned before, there is always a slight tension between the coiler and card calender rolls, and between the card calender rolls and the doffer. Take the Lowell card, shown in Fig. 16, for example and calculate the tension between the coiler and card calender rolls as follows:

$$\frac{2.125 \times 31}{15 \times 4} = 1.098.$$

Find the tension between the 4-inch card calender roll and the 24-inch card doffer as follows:

$$\frac{4 \times 192}{30 \times 24.75} = 1.034.$$

In this calculation the diameter of the doffer is taken at 24.75-inch or from point of teeth to point of teeth on opposite side of doffer, as this is the surface from which the cotton is combed. The doffer measurements are always given on the bare surface and the clothing is ⅜-inch thick, which makes the additional ¾-inch added to the doffer diameter.

If these two tensions are multiplied together we would get 1.135 as the total draft or tension between the coiler

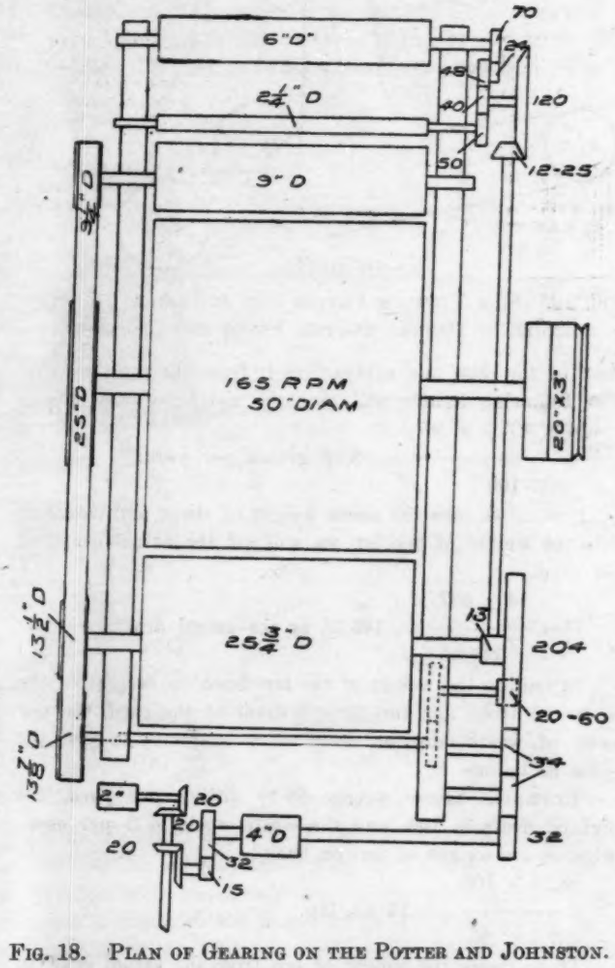


FIG. 18. PLAN OF GEARING ON THE POTTER AND JOHNSTON.

rolls and the doffer, and if we figure this tension from the gearing we find that the two coincide as seen below:

$$\frac{2.125 \times 31 \times 192}{15 \times 30 \times 24.75} = 1.135.$$

It must be taken into consideration, that, in using the draft factor to get the draft of a card, we get the figured draft, that is, the actual ratio between the length of material received and delivered. This draft is always less than the actual draft, as obtained from the weights on the front

and back of the card. As the actual draft is the exact ratio between the weights at these two points, it must of necessity take into consideration any loss of material in the form of waste taken out by the card as the cotton passes through. The amount or per cent. of waste made by the card must be deducted from the total weight on the back before we can get the exact weight of the sliver on the front.

Example. If the lap on the back of the card weighs 14 ounces per yard, the card makes 5 per cent. waste, the figured draft is 100, what is the weight of the sliver? As the sliver is expressed in grains per yard, we must reduce the weight of the lap to grains, there being 437.5 grains in an ounce. Now to allow for the per cent. of waste made we can multiply by .95, which is the same as getting 5 per

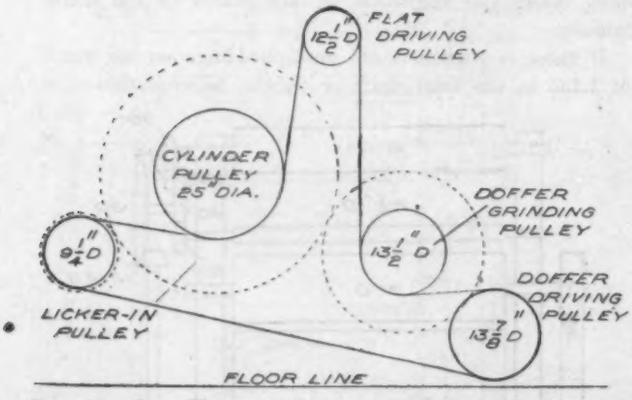


FIG. 19. SIDE VIEW OF POTTER AND JOHNSTON SHOWING METHOD OF DRIVING DOFFER, FLATS AND LICKER-IN.

cent. of the total and subtracting it from the total weight. The following figures will give the weight of the sliver:

$$\frac{14 \times 437.5 \times .95}{100} = 58.19 \text{ grains per yard.}$$

Now if we take the above weight of sliver and divide it into the weight of the lap we will get the actual draft of the card.

$$\text{Then } \frac{14 \times 437.5}{58.19} = 105.25 \text{ as the actual draft.}$$

In finding the weight of the lap from the weight of the sliver on front and the figured draft of the card, the per cent. of waste must be taken into consideration just the same as before.

Example. Sliver weighs 58.19 grains per yard, the figured draft is 100, and the waste made is 5 per cent., what is the weight of lap on back?

$$\frac{58.19 \times 100}{437.5 \times .95} = 14 \text{ oz. lap.}$$

If we figure the weight of lap from the actual draft of 105.25 and the weight of sliver obtained above we get:

$$\frac{58.19 \times 105.25}{437.5} = 13.998 \text{ oz. lap.}$$

This is close enough to call a 14 oz. lap. The foregoing examples and figures ought to make clear the effect the waste has on the weight of the sliver and the difference between figured draft, obtained from the gearing, and the actual draft, obtained from the weight on front and back of the machine. Always bear in mind that the weight on the back of the card is 100 per cent. or the whole; that in figuring the weight on the front, the waste must be taken out of the total weight going into the machine, unless we use the actual draft. Also the weight on front and the figured draft multiplied together will give a certain percentage of the total weight on the back, this percentage depending upon the amount of waste taken out during the operation of the machine.

In the above cases, the weight on back is taken as 100 per cent., then the waste is 5 per cent. and the amount that passes through the machine is 95 per cent. Consequently the weight of sliver multiplied by the figured draft will represent only 95 per cent. of the amount being fed into the machine, the other 5 per cent. being waste. The two following formulas are deduced from the foregoing remarks and examples.

To find the weight of sliver:

$$\frac{\text{Weight of lap} \times 437.5 \times .95}{\text{Figured Draft}} = \text{grains per yard in sliver.}$$

To find the weight of lap:

$$\frac{\text{Weight of Sliver} \times \text{Figured Draft}}{437.5 \times .95} = \text{Weight of lap in ozs. per yard.}$$

It will be understood that when the actual draft is known instead of the figured draft, it is simply a case of dividing the weight on back by the actual draft to get the weight on the front, and the weight on front multiplied by the actual draft will give the weight on the back. In the above examples the waste of the card has been taken as 5 per cent., as this is considered a good fair average, but where the waste is more or less, the allowance must be made. For instance if the card is making 6 per cent. of waste, use .94 in the rules given in place of the .95.

(To be Continued.)

The march of commercial and industrial progress has overtaken Greece, and everywhere evidences are discernible that the country has taken its place in the procession. The conditions are most inviting to the United States and facilities offered for satisfactory conduct of trade are better than is generally known in American business circles. Cotton fabrics constitute the largest item in the list of imports, the value aggregating $3,500,000 to $4,000,000 annually. In the last calendar year England sold in Greece $1,773,000 worth of cotton piece goods and upward of $900,000 of woolens and worsteds. Of iron and steel products Greece imports nearly $2,000,000 worth annually, most of which is credited to Western Europe.

An American consul in Asia Minor reports that the annual importation of cotton goods into his district amounts to over half a million dollars, of which the greater part is of Italian manufacture. He believes there should be a larger market for American goods than at present obtains, particularly for cabot cloth, prints, and remnant pieces. The name of a local importer who is desirous of obtaining samples and prices of such goods is given. Inquiries should be addressed to the Bureau of Manufactures, Washington, D. C., and refer to File No. 6754.

KNITTING

THE MANUFACTURE OF LATCH NEEDLE RIBBED UNDERWEAR.

(Contributed Exclusively to Cotton.)
BY "TUCKER."

Having considered the requirements of the fabric necessary, a study of the machine and operations necessary to produce the fabric is now in order.

Fig. 3 shows a cut section through one side of a head and also the main shaft with driving pulleys. H is the upright framing of the machine to which the bed plate D is cap-screwed and upon which the cylinder cam ring C revolves. The cylinder T is cap-screwed to the bed plate and held stationary. The main or driving shaft F carries a hand wheel and tight and loose pulleys. It also carries a small grooved pulley which through a slack cotton band drives the take up rolls placed underneath the machine. Also the bevel gear E which meshes with a ring gear on the bottom of the cam ring C.

The cam ring C is a large solid ring extending completely around the cylinder T and carries the cam sections A of which there are a number equal to one for each feed. This cam section A carries the cylinder needle cams which give the cylinder needles the required up and down movement as described in Fig. 2-A, B, C, and D. The cam ring C also carries a small section ring B. This ring is used simply as a filler. The cam sections may be removed by removing first the cap screw and then the section ring B. This will allow the cam section A to be moved back, away from the needles and it can then be taken out without disturbing the needles.

Fig. 4 shows the cam section in elevation showing the position of the various cams which actuate the cylinder needles. The cam section revolves in the direction shown by the arrow and the needle race is marked by the dotted line. The cam A is used as a guard cam to prevent the needle from jumping or fluttering while the machine is running. The cam B serves two purposes. The first one is to land the needles to what is called the tucking point. This brings the loops down onto the latches so that they are over the latches holding them open. This occurs before the yarn guide covers the needles. This makes sure the latches are open and the needles free to draw new loops.

The high part of the cam B lands the needles to the clearing point. At this time the old loops are below the latches and the yarn guide has covered the needles and carrying the yarn allows it to be taken by the hook of the needle. This cam B is known as the landing cam. The cam C is the stitch cam and is used to force the needles down casting the old loop off and drawing a new loop. This cam performs an important part in the knitting operation, in that it regulates the length of the stitch drawn by the cylinder needles. This cam is screwed to the pin E which rests on a spring. It is held down against this spring by the cap screw F.

The position of the cam C can be adjusted therefore by adjusting the pin E by means of F. Screwing in on F will lower the cam which will draw the needles down farther causing them to draw a longer loop. Raising F will raise the cam shortening the length of the loop. D is the rest cam which brings all the needles to one common level, the object being to even the length of the stitches drawn. G is a guard which prevents the needles from flying outside the yarn guide. The right hand cam section shows the adjust-

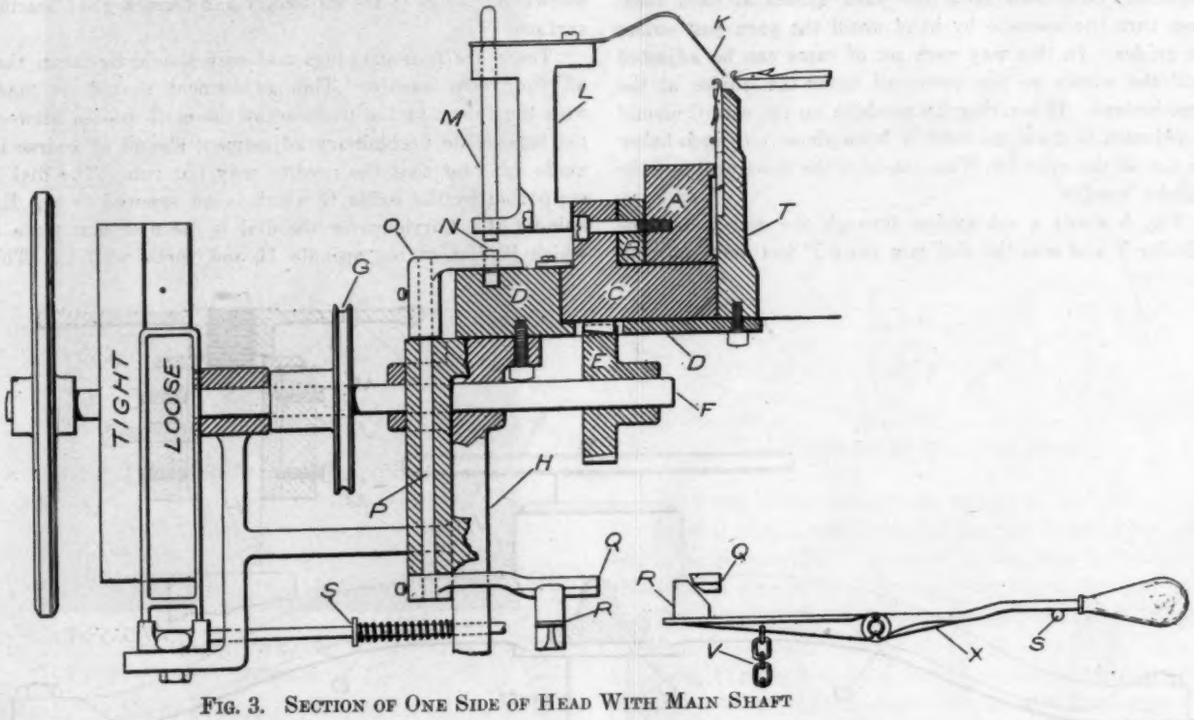


FIG. 3. SECTION OF ONE SIDE OF HEAD WITH MAIN SHAFT

ment of the stitch cam very clearly. Suitable openings in the cam section are made over the rest cam D which allows defective needles to be removed and new ones put in.

Each feed on the machine works in conjunction with a cam section and it is very important that each section should draw the same length of loop. Otherwise the fabric would be thick and thin and feel ridgy and very uneven. It can be seen that the cams A and D take no active part in the formation of the stitch. All adjusting must be done on the stitch cam C. The best method is to measure the same length of yarn back from the yarn guides at each feed. Then turn the machine by hand untill the yarn just enters the guides. In this way each set of cams can be adjusted until the marks on the yarns all enter the guides at the same instant. In starting the machine up the cam C should be adjusted to draw the needles down about 1-16 inch below the top of the cylinder. This explains the movements of the cylinder needles.

Fig. 5 shows a cut section through the dial E and the cylinder T and also the dial cam plate P and dial cam ring R which carries the cams actuating the dial needles. The dial E is screwed to and supported by the plate F, both being loose on the dial spindle H. It will be remembered that the cylinder T is cap screwed to the bed plate and therefore stationary. The dial E is prevented from turning by the lugs V being against lugs U in the cylinder. It is also important that the dial needles should work out between the cylinder needles and the needle slots on the dial should come opposite blanks on the cylinder. This is adjusted by the setting of the lugs V by means of thumb screws W. Lugs U are stationary and form a good bearing surface.

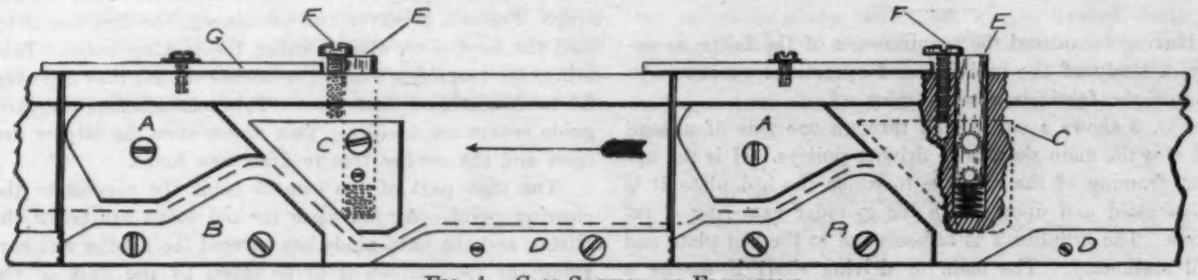


FIG. 4. CAM SECTION IN ELEVATION.

There are four dial lugs and care should be taken that all four bear evenly. This adjustment should be made with the fabric in the machine as the cloth passes between the lugs. The preliminary adjustment should of course be made in order that the needles may not rub. The dial is supported by the collar G which is set screwed to the dial spindle H. Carried over the dial is the dial cam plate P which is fast to the spindle H and turns with it. This

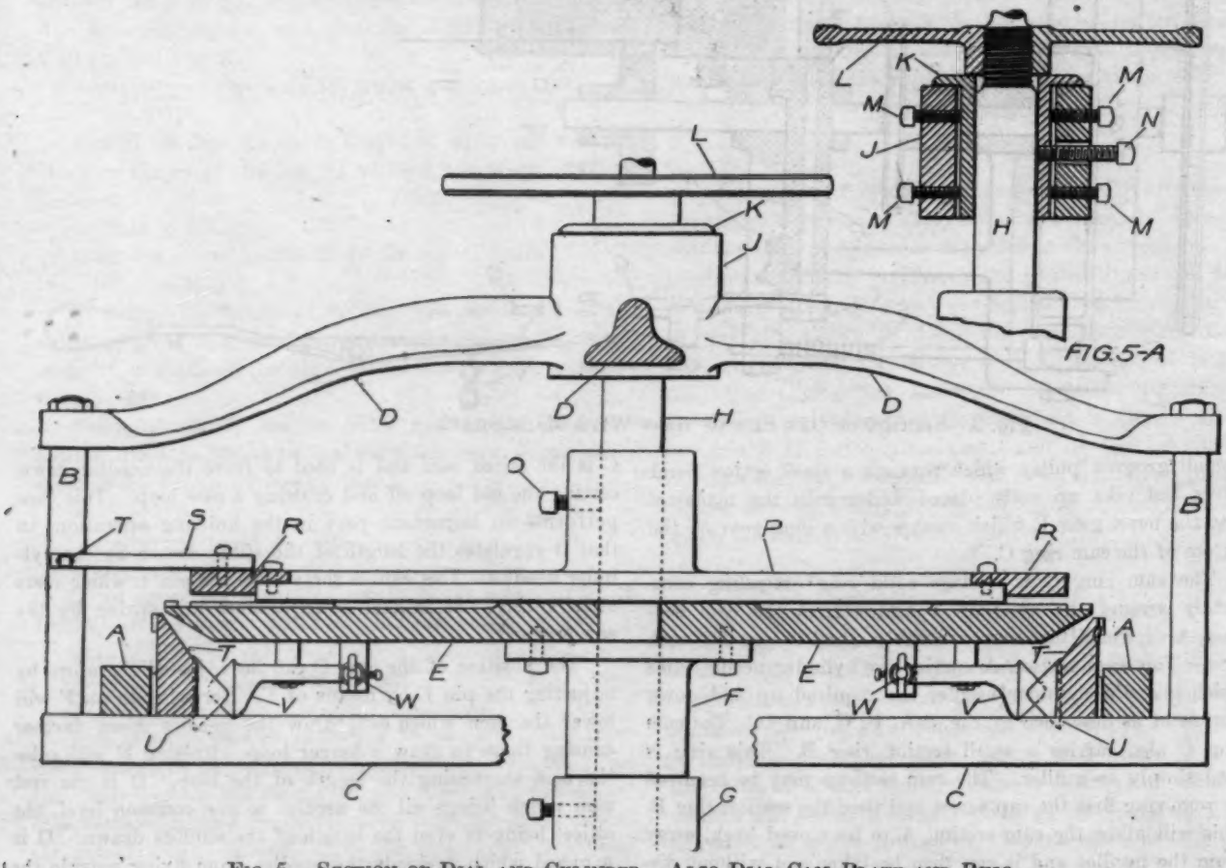


FIG. 5. SECTION OF DIAL AND CYLINDER. ALSO DIAL CAM PLATE AND RING.

plate carries the dial cam ring R. The dial spindle H is supported by the head J which is carried by four arms D which rest on the head supports B.

The supports B are screwed into the cam ring C and turn with it. This through the arms D turns the head and the dial spindle which in turn gives the dial cam plate P its rotating motion. The dial spindle and therefore the dial has two adjustments all provided for in the head J and shown more clearly by the cross section at Fig. 5-A. The spindle H is supported by the adjusting wheel L resting upon the inner collar K. K. in turn is supported by J. The inside collar K is made somewhat smaller than the bore of

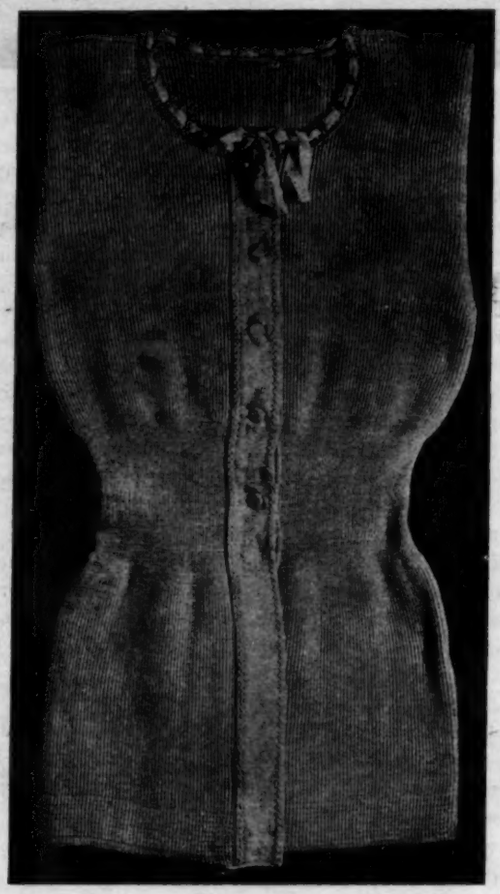


FIG. 7. SHAPED GOODS PRODUCED BY TUCKING ON DIAL NEEDLES.

the head J and is held firmly in place by set screws M, there being eight of them. These set screws allow of an adjustment of the dial so that it will be concentric with the cylinder. This is a horizontal adjustment. The upper end of the spindle H is threaded and the hand adjusting wheel L is screwed down on it.

The spindle is set screwed to the inner collar K by two set screws N. The turning of the hand wheel when these two set screws are loosened will raise or lower the dial depending upon the way in which the wheel is turned. This arrangement allows of a vertical adjustment of the dial governing the opening between the cylinder and dial. This also regulates the length of the stitch. The higher the dial the longer the loop drawn.

The movement of the dial needles is controlled by the dial cams a plan of which is shown at Fig. 6. This diagram was made looking down upon the dial plate and shows the dial cams, as they rest on the needles, in dotted lines. Only three sets are shown, the others being only a repetition. P is the dial plate secured and held by the screws O to the dial spindle. The plate turns in the direction shown by the arrow.

The needles are drawn in and out by the cams which work in unison with the cylinder cams. A is a guard cam to prevent the needles from jumping and takes no part in the formation of the stitch. C is the landing cam which lands all needles to the tucking point making sure the latches are all open before the guide moves over them. D is the clearing cam which forces the needles out far enough to bring the old loops below the latches. B is the dial needle stitch cam which regulates the distance the dial needles are forced back into the dial thus regulating the length of loop drawn. This cam is adjusted by means of screws F. Cam E serves to prevent needles from fluttering and also as a rest cam.

The half cardigan stitch is made by tucking on the dial needles. In tucking, the needles are landed out far enough to take a new loop and not far enough to drop the old loop back of the latch. This is done by adjusting the clearing cam D. Usually only every other one can be adjusted and

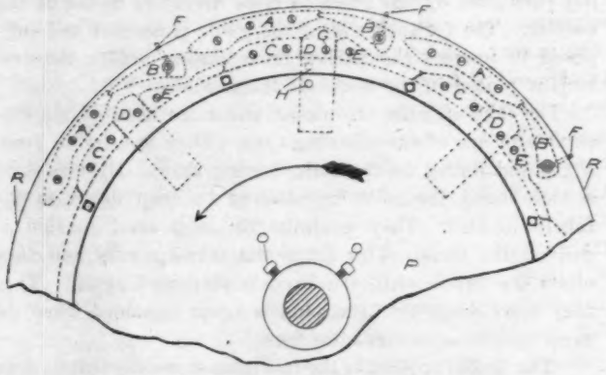


FIG. 6. PLAN OF THE DIAL CAMS.

in Fig. 6 the center cam D can be moved in. To do this the screw G must be removed and the cam forced back until the holes H coincide. The screw G can then be placed in this hole H and screwed down. This draws the cam back and so only brings the needles at this feed to a tucking point.

From Figures 2-A, B, C and D it can be seen that the cylinder needles lay the yarn for the new loop onto the dial needles. It is important that the yarn should be placed in the proper position on the needle, else it will either drop the stitch or make a poor series of loops.

The cylinder needles should lay the yarn onto the dial needles just back of the rivet holding the latch to the needle proper. The new loop is then always sure to be covered by the latch when the latch is forced over by the old loop. This adjustment can be made by turning the dial cam plate P around on the spindle. First loosen set screws O and then by adjusting rod S and adjusting screw T, Fig. 5, turn the dial cam plate until the needles are in the correct position. The adjusting screw T bears against the upright B. There are two of these adjusting points. Both must bear firmly against the uprights before tightening the set screws O.

The next point to be considered is the adjustment of

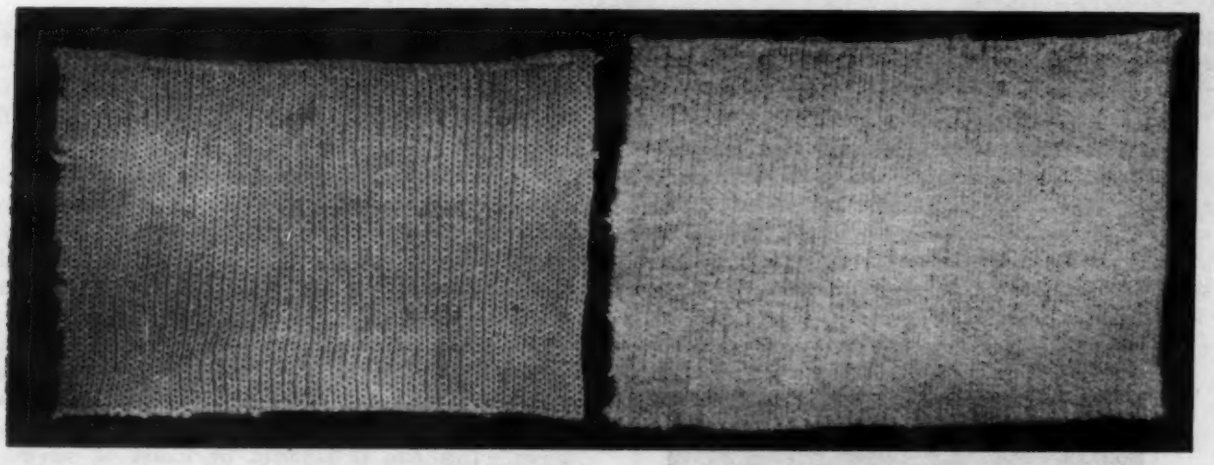


FIG. 8. SAMPLE OF LATCH NEEDLE RIBBED FABRIC MADE ON CLASS 2 MACHINE. 12 NEEDLES PER INCH. RIBBED SIDE.

FIG. 9. SHOWING FLEECE SIDE OF FABRIC.

the yarn guide. This must be so adjusted that the yarn is correctly fed to the cylinder needles. It must be set out far enough to clear the cylinder needles and still properly feed the yarn. It must be set up enough to allow the dial needles sufficient clearance when they come out. Again care should be taken that the latches of both sets of needles are not permitted by the guide to close upon the hooks of the needles. The forward end of the guide is beveled and supposed to prevent the latches from closing before the new loop is placed in the hooks of the needles.

The take-up rolls are placed under the head of the machine and are of the climbing type. They are driven from a grooved pulley on the main driving shaft. By means of a loose band the rolls are allowed to drop down as the fabric is knit. They continue to drop until tension is put on the band. This turns the take-up rolls and they climb the fabric until the band is slackened again. Then they move down until the band is again tightened when the same operation occurs once more.

The weight applied to the fabric must be sufficient to draw it down through the opening between the cylinder and dial. A counterbalance lever projects out from the take-up rolls and by hanging weights upon it any desired tension may be applied. These take-up rolls should be pressed together with even tension and must be parallel and straight with the fabric so that they will pull evenly on each side. Adjustments are provided for making these various settings.

Due to an uneven take-up or holes in the fabric, the cloth sometimes bunches up between the needles. If the machine was allowed to continue to run great damage would be done to the needles and as the operative cannot always watch each machine, a stop motion is applied for this purpose. Referring back to Fig. 3 an explanation of this stop motion will be given. K is known as the feeder. It occupies some such position as shown in the sketch. It should extend into the opening somewhat between the cylinder and dial at a point where the dial needles extend the farthest in. This feeler turns about a screw held in the upright stand L. At the other end it holds the pin M up so that it clears the ring N.

This ring N is loose and is free to turn in the bed plate D. It remains stationary unless turned by the pin M which is allowed to drop when the feeler K is thrown around when coming in contact with the fabric bunching up between the cylinder and dial. The upright stand L is carried on the cam ring and turns with it and in turn gives to the ring N a rotating movement when the pin M is dropped down into the openings in the ring. The lever O also enters the openings in the ring N and by means of a pin P supports the knock off lever Q.

The turning movement of the ring N will throw the levers O and Q around and will bring Q against the projection R on the locking lever X. This forces that end of the lever down and lifts the front end up, releasing the shipper rod S which is forced over by a spring throwing the belt onto the loose pulley, and stopping the machine. Two such stop motions are applied on each machine so that the stop motions operate to stop the machine within 1-2 a revolution.

The chain V connects the locking lever with the take-up rolls and stops the machine if these rolls fail to properly climb the fabric or if the work presses off the needles. Care should be taken to set the feeler K properly and to see that the pin M moves freely.

An additional stop motion can be supplied or not as the knitter wishes. This is known as the yarn automatic stop motion which stops the machine when the yarn breaks. This prevents the yarn from running through the guide and pressing the work off.

Consul J. H. Johnson, of Matamoros, quotes Juan H. Fernandez, the largest cotton raiser in that Mexican district, as stating that he and his neighbors for 15 miles or more above and below his plantation on the Rio Grande are planting double the amount of acres in cotton this year. Everything seems to be favorable for a good cotton crop.

F. C. Enright, for many years vice consul of the Argentine Republic at Chicago, informs the department that he is soon going to Buenos Aires as the representative of the Chicago Association of Commerce. He plans to open an office in Buenos Aires, to keep supplied with catalogues and circulars relative to Chicago industries, and to canvass Argentina, Paraguay, Uruguay, and Chile with a view to interesting the merchants of that region in American products and establishing there reliable agencies for the sale of American manufactured goods. The plan also contemplates the eventual establishment at Buenos Aires of a permanent exposition of American products.

DYEING, BLEACHING AND FINISHING.

THE MERCERIZING OF COTTON CLOTH.

PREPARING THE CLOTH—METHOD OF APPLYING THE MERCERIZING SOLUTION—WASHING AND NEUTRALIZING—SCHREINERING FOR SATEENS AND ITALIAN CLOTHS.

(*Contributed exclusively to* COTTON.)

BY J. MERRITT MATTHEWS, PH. D.

The mercerizing of cotton cloth in the piece, as far as the principles of the treatment are concerned, are exactly similar to those of mercerizing cotton in the form of yarn. There is, however, a radical difference in the method of treatment, necessitated of course, by the form of the material to be handled.

From what has been stated in the article on the mercerizing of cotton yarns, (page 192, March issue of COTTON), it will be readily understood that the mercerizing of cotton cloth in the piece requires the following processes:

(1) Treatment of the cloth to a preliminary boiling-out process whereby the fiber is brought into such a condition as to be readily absorbent of the mercerizing liquors. In the case of the heavier weaves of cloth, this boiling-out process must be especially thorough, otherwise the mercerizing liquors will not penetrate uniformly and completely through the mass of the fabric and this will lead to bad work.

(2) Saturation of the cloth with a caustic soda solution of 55 to 60 degrees Twadell. This treatment is usually accomplished in a special form of padding machine provided with suitable squeeze-rolls so as to force the caustic liquor well into the fiber of the goods. This solution is the mercerizing bath, and the temperature must be maintained below 70 degrees Fahr., and the density or strength of the liquor must be kept at a constant point by proper circulation and additions of stronger solutions to make up for the caustic soda which is taken up in combination with the cotton.

(3) Application of tension to the cloth immediately after it has become saturated with the caustic soda. This tension must also be applied in both the direction of the warp as well as that of the filling, for both threads must be kept under proper tension to prevent shrinkage in either length or width. It is only in this manner that a proper degree of mercerizing can be brought about; for if tension is applied in the warp direction alone, these threads will be mercerized and lustred, whereas the filling threads will shrink considerably, causing the cloth to pucker, and furthermore these threads will not receive any lustre, and the mercerizing of the cloth as a whole will be sadly defective.

(4) Treatment of the cloth with wash-waters for the purpose of completing the mercerizing action and removing the majority of the caustic soda liquors from the goods. This washing, or at least the first portion of the washing, must be carried out while the cloth is still maintained in a state of tension, otherwise the goods will shrink up and the mercerizing effect will be lost.

(5) Treatment of the cloth with a dilute solution of acid for the purpose of removing the last traces of the caustic soda from the cloth. This treatment is not carried out with the cloth in a state of tension, as after the majority of the caustic soda has been removed by the washing with water, the mercerizing reaction is completed and the fiber is set in its permanently mercerized form; consequently the tension is no longer necessary. In fact, the cloth at this point, that is to say, when the treatment with acid is carried out, shows a tendency to stretch out somewhat rather than contract.

(6) A final finishing operation, usually employing a softening compound for the purpose of neutralizing any excess of acid, and also for the purpose of softening the fiber which is rendered rather harsh by the treatment with the caustic soda as well as the acid baths. This operation may be considered as completing the mercerizing process proper. The processes of calendering, stiffening, embossing, etc., which may follow after the mercerizing, are to be considered further processes of finishing, and can not be included within the scope of the mercerizing itself.

The boiling out of cloth for mercerizing has to be done with more care and thoroughness than is the case with yarn. This is on account of the fact that the impurities in cloth are of a different character and of much greater amount than with yarn. While yarn has only the natural impurities of the fibre, cloth contains a quantity of sizing used for facilitating the weaving operations. This size consists of various mixtures of starch, fats and gums, and is somewhat difficult to remove thoroughly. Therefore, as a rule, a simple boiling of the cloth in soap solution, or soluble oil, or a dilute solution of alkali is not sufficient as is the case with yarns. The cloth must be subjected to a very thorough kier boiling in a manner very similar to that used previous to bleaching cloth. A good soda boil in a high pressure kier for six to eight hours is required. This will decompose the starchy matter and saponify the fats and oils which may have been used in the size. After the boiling a good washing must be given in order to remove all the decomposed matters. The boiling of cotton cloth previous to mercerizing should be always carried out with the purpose of obtaining as clean and pure a cloth as possible; impurities of any kind will act in a detrimental manner in the mercerizing process, and cause defects to arise in the cloth as well as giving deficient luster, the real object of the mercerizing process.

The saturation of the cloth with the mercerizing or caustic soda solution must be carried out with care and intelligence, for if the cloth is not evenly and thoroughly saturated the mercerizing or luster will not be produced with uniformity and defective cloth will be the result. The machine employed for saturation is of a special type built for this immediate purpose. It is a mangle usually with three bowls, the middle roll consisting of iron and the other two of hard rubber. Care must be had that the rolls are very even across their width, as otherwise the cloth would become unevenly saturated. The running of the cloth through the mangle should be so arranged that the piece gets two to three dips in the caustic soda solution with heavy squeezes between each dip. The caustic soda solution in the mangle must be maintained at a constant strength and cooled by means of circulation through a large

reservoir of caustic soda, as was explained in the case of yarn mercerizing. Artificial cooling of the liquor in the mangle box is not necessary if this circulation is properly conducted.

In the case of light weight fabrics like muslins, lawns, and shirtings, it will only be necessary to take the cloth through the saturating mangle once, so these goods can then be taken straight away from the mangle to the tenter frame for the purpose of putting on the required degree of tension. But with heavy goods, it will often be necessary to pass the cloth through the mangle twice before being fed into the tenter.

The tenter frame should be provided with special clips for mercerizing, being made entirely of iron, as the usual brass clips would be rapidly attacked by the strong caustic soda liquors. These clips must also be especially strong and so adapted that a very considerable tension can be put on the cloth. The usual form of tenter employed for mercerizing ranges is of the self-feeding type; but even with this, it is necessary that great care be had that the clips take up the cloth evenly and tightly, and it is necessary to have a careful workman give this point his constant attention. If this is neglected there will be streaks across the cloth owing to irregular mercerizing; a defect which will be emphasized if the cloth is subsequently dyed in light colors. The tenter frame is usually about 40 feet in length and will get off about 10,000 to 15,000 yards of cloth per day. As the cloth passes along the tenter frame under tension, it is first stretched out to its required width, then travels along at an even tension for some time. After traveling about half the length of the frame, the cloth is then subjected to the action of water through spray pipes above and below. The first washing of this kind is usually done with warm water, and the wash waters are caught in a basin below the machine.

When the cloth comes off the tenter the most of the caustic soda should have been removed from the cloth, after which the mercerizing action proper is finished, and the tension can be removed. Coming from the tenter frame, the cloth is next passed into a washing box where it receives a further good washing with cold water, the cloth of course being kept in the open width in all these operations after leaving the tenter frame. From the washing box, the cloth is carried through a similar box containing a solution of dilute sulphuric acid for the purpose of neutralizing the final trace of alkali which is practically impossible to totally remove by washing in water alone. The strength of the acid should be so adjusted as to have but a slight excess of acid in the cloth after the alkali is neutralized. A further washing with cold water is now required to remove the excess of acid, and the process may then be considered as finished as far as the mercerizing process is concerned.

Frequently a further lustering operation is given the mercerized cloth by a special method of calendering, known as "Schreinering." This consists essentially of calendering the cloth with a hot steel roll which is engraved with very fine lines running about 250 per inch. The direction of the lines usually runs at an angle to the length of the cloth, as is more or less conditioned by the direction of the twist in the yarn to get the best results. This operation is practically embossing the cloth in a pattern made up of fine diagonal lines so close together as to be invisible to the eye. The effect is to greatly enhance the luster, as it causes a peculiar reflection of the light rays. The schreinering process can be carried out on cloth independently of mercerizing, and is used to a great extent for it produces a fabric which has a luster and appearance very closely resembling a silk fabric, and therefore it has come into great demand.

CHEMICALS USED IN THE TEXTILE INDUSTRY.

(*Reported Exclusively to* COTTON.)

BY DR. FREDERIC DANNERTH.

LECTURE IX.

ALCOHOLS AND ORGANIC SOLVENTS.

Our attention in this lecture will be directed to three classes of chemical bodies, which have been grouped together because of their similarity in various respects. Thus they all belong to the large division of the science now designated by chemists as the Chemistry of the Carbon Compounds but formerly called Organic Chemistry. Furthermore they are for the most part volatile at low temperatures, that is, they evaporate readily, and the members of the first two groups are characterized by the presence of the "Hydroxyl" group (O-H) in their formula. The substances which will be considered are: Group 1—Methyl alcohol, Ethyl alcohol, Glycerol. Group 2—Phenol, Resorcinol, Trinitro-phenol, a-Naphthol, b-Naphthol. Group 3—Chloroform, Carbon tetrachloride, Acetone, Carbon disulphide, Ligroin, Benzol, Turpentine.

METHYL ALCOHOL ($C H_3 O H$) is prepared on an industrial scale by the dry distillation of wood in iron retorts at the lowest possible temperature. It is hence known as wood spirit or wood alcohol. This process of distillation yields (1) gases such as methane, carbon monoxide, carbon dioxide, and hydrogen; (2) wood-tar; (3) a watery fluid consisting of acetic acid, acetone and methyl alcohol in addition to a great variety of substances which are present only in small quantities. The acetic acid is neutralized by adding lime to the aqueous distillate and the alcohol is separated from this by distillation. Pure methyl alcohol boils at a temperature of 66 deg. Centrigrade and mixes with water in all proportions. It also mixes with solutions of caustic soda but does not enter into chemical combination with the latter substance. 1,000 cubic centimeters of methyl alcohol at 4 deg. C. weigh 812 grams, whereas 1,000 CC. of water weigh 1,000 grams—hence we say that the specific gravity of methyl alcohol is 0.812 at 4 deg. C. Most commercial specimens of wood alcohol will assume a dark brown color if mixed with caustic soda and allowed to stand for a few days. This discoloration is due to the presence of small amount of foreign matter and may be avoided by first distilling the alcohol with lime or caustic soda. Methyl alcohol was at one time suggested as a penetrating agent for the mercerizing process as it is very readily absorbed by the cotton fiber. Alcohol is an excellent solvent for shellac, a property which makes it possible to apply this resin to textile fabrics for waterproofing purposes. Alcohol is used to a limited extent as a solvent for dyestuffs.

ETHYL ALCOHOL ($C_2 H_5 O H$) is prepared on a large scale in immense quantities from materials containing a large percentage of starch. For this purpose either potato

starch or any grain starch may be used. Its preparation from the latter material has given it the trade name "grain alcohol." These starches are converted into Maltose by the action of an enzym or they may be converted into Glucose by boiling with dilute acids. The potato pulp is converted into Maltose in about 20 minutes by the addition of Malt at a temperature of 60 to 62 deg. C. The Maltose solution is then fermented by the action of yeast at a temperature of about 33 deg. C., and the Alcohol is separated from the mixture by distillation. Grain alcohol may be used in any case in place of wood alcohol. It differs from the last named by having a much higher boiling point (78 deg.) *Ethyl-tartaric acid* may be prepared from ethyl alcohol by heating this liquid with powdered tartaric acid. It possesses a pleasant odor, is colorless and is an excellent solvent for many dyes,—a fact which makes it of value for use in calico printing. The commercial article (specific gravity = 1.110) is a mixture of mono-ethyl tartaric acid and diethyl tartaric acid, free tartaric acid and free alcohol. It decomposes in steaming under regeneration of alcohol and therefore does not attack the fiber as much as does tartaric acid.

GLYCEROL [$C_3 H_5 (O H)_3$] is the chemical term for the article sold in commerce as Glycerin. It is of oily consistency, colorless, sweet, and mixes with water in all proportions. In fact it has a marked affinity for water so that a substance which is covered with glycerol will not dry out. Its specific gravity is 1.265, and when boiled under ordinary conditions decomposition takes place. One important test for glycerol is to heat it with concentrated sulphuric acid whereby the irritating vapors of Acrolein are given off. Glycerol occurs widely distributed in Nature in the form of glycerides. Fats and oils (obtained from plants and animals) are essentially tri-glycerol esters of Stearic, Palmitic and Oleic acids. Glycerol is obtained from these by the process termed saponification. It may be effected either by lime or by concentrated sulphuric acid. These fats and oils are the *only* commercial source of Glycerol. The "sweet liquor" obtained by the saponification process is concentrated to a liquid containing about 90 per cent. actual glycerol and then appears in commerce as "raw glycerin." It is purified by distillation with superheated steam. Commercial samples of Glycerol vary in specific gravity from 1.165 to 1.240. Glycerol has been recommended as an addition to the mercerizing bath, as it facilitates the wetting out of the cotton. In the printing room it is used as a solvent for the dyes and as a medium for attracting water (hygroscopic agent) as most wool dyes develop better when subjected to moist steam.

ACETIN [$C_3 H_5 (C_2 H_3 O_2)_3$] is the commercial name for glyceryl acetate. As the formula for glycerol is $C_3 H_5 \begin{cases} O\text{-}H \\ O\text{-}H \\ O\text{-}H \end{cases}$ and the formula for acetic acid is H-O-O-C-CH_3, it is possible to prepare acetic synthetically by heating the two substances under suitable conditions according to the following reaction:

$$C_3H_5\begin{cases} O\text{-}H \\ O\text{-}H \\ O\text{-}H \end{cases} + \begin{matrix} H\text{-}O\text{-}O\text{-}C\text{-}CH_3 \\ H\text{-}O\text{-}O\text{-}C\text{-}CH_3 \\ H\text{-}O\text{-}O\text{-}C\text{-}CH_3 \end{matrix} = C_3H_5\begin{cases} O\text{-}O\text{-}C\text{-}CH_3 \\ O\text{-}O\text{-}C\text{-}CH_3 \\ O\text{-}O\text{-}C\text{-}CH_3 \end{cases} + \begin{matrix} O\text{-}H\text{-}H \\ O\text{-}H\text{-}H \\ O\text{-}H\text{-}H \end{matrix}$$

The chemist explains this diagram by stating that *one* molecule of glycerol unites with *three* molecules of acetic acid to form one molecule of the new compound (Tri-acetin) and three molecules of water ($H_2 O$) are liberated or set free. If only two molecules of acetic acid had been used we would have obtained "Di-acetin," and if only one molecule of acetic acid had been used we would have obtained "Mono-acetin." The substance which is used in the printing room as a solvent for dyes is a mixture of Mono-acetin, Di-acetin and Tri-acetin. The chemistry of this compound has been discussed at some length, as it resembles very closely the chemistry of STEARIN. This latter compound was discussed in the lecture on soap where it was referred to as glyceryl stearate. Its formula is $C_3H_5\begin{cases} O\text{-}O\text{-}C\text{-}C_{17}H_{35} \\ O\text{-}O\text{-}C\text{-}C_{17}H_{35} \\ O\text{-}O\text{-}C\text{-}C_{17}H_{35} \end{cases}$ so that it would be more accurate to call this Tri-stearin just as the previously explained compound is termed Tri-acetin.

The second group of substances comprises benzol derivatives which contain the "hydroxyl" group in their formula. They are all soluble in caustic soda solution but are insoluble or only slightly soluble in pure water.

PHENOL (oxy-benzene $C_6 H_5 O H$) occurs in commerce as "carbolic acid," the designation "acid" having been applied by householders because of the danger connected with the careless use of this substance. I wish to emphasize that phenol is not an acid in the true chemical sense of the term. The coal-tar obtained from gas-works contains enough phenol to warrant extraction, but for this purpose the crude tar must be first distilled. The carbolic oil or middle fraction thus obtained contains about 25 per cent. of phenol, which can be readily removed by agitating the distillate with a solution of carbonate of soda. The solution is separated from the insoluble oil and is then treated with sulphuric acid, in order to set free the phenol. It is purified by fractional distillation and crystallization. The chief use of phenol in the textile industry is as a preservative for starch pastes and plant mucilages (decoctions of Iceland moss, Irish moss, gum tragacanth and gum ceratonia may readily be preserved by adding one-half per cent. phenol.)

TRI-NITRO-PHENOL [$C_6 H_2 O H (N O_2)_3$] is the chemical term for "picric acid." Here again we have an instance of distorted nomenclature, for this substance has nothing in common with the acids. The term probably originated in the fact that this compound is prepared by dissolving phenol in concentrated sulphuric acid and pouring the whole into concentrated nitric acid. "Picric acid" is used to this day in the dyeing of wool and silk as an acid dye for the production of green tints of yellow. A solution of potassium cyanide produces a red color when added to picric acid.

RESORCINOL [meta-dioxy-benzene: $C_6 H_4 (O H)_2$] occurs in commerce as "resorcin" and finds application in the production of diazotized and developed colors. A solution of resorcinol gives a dark violet coloration with ferric chloride.

ALPHA-NAPHTOL (alpha oxy-naphtalin: $C_{10} H_7 O H$) and BETA-NAPHTOL (beta oxy-naphtalin) are two closely related products which find extensive application in the dye-house and in the printing room for the production of diazotized and developed colors. "Para Red" which has come into great favor as a substitute for "Turkey-Red" is produced by diazotizing para-nitranilin and subsequently developing with beta-Naphtol. Both Naphtols must be dissolved in a solution of caustic soda before they are added to the developing bath. Naphtol Yellow S is a dyestuff

prepared from 2-4-dinitro-alpha-naphtol.

CARBON TETRACHLORIDE (tetra-chlor-methane: C Cl_4) is a liquid which has commanded special attention of recent years, as it effectively removes oil and grease spots without the usual danger of inflammability. It boils at 78 deg. C. and has a specific gravity of 1.600. It is prepared from carbon disulphide and hence is liable to contain compounds of sulphur. Carbon tetrachloride is insoluble in water.

CHLOROFORM (tri-chlor-methane: C H Cl_3) is used for removing grease from fabrics. It boils at 61 deg. C. and is not inflammable (that is, it does not burn in the air). The specific gravity is 1.500. The chief objection to chloroform as well as to Tetrachloride is the fact that they act as anesthetics, so that workmen using these liquids must be warned of their danger. Chloroform is only slightly soluble in water.

CARBON DISULPHIDE is an excellent solvent for sulphur and for fats, but is objectionable because of the danger connected with its use. It boils at 46 degrees C. and takes fire very readily, and is insoluble in water. The specific gravity is 1.265.

ACETONE [di-methyl-ketone: $(C H_3)_2 O$] is a colorless liquid, miscible with water in all proportions. It boils at 56 deg. C. and has a specific gravity of 0.800. It is prepared from calcium acetate by dry distillation and is of great value as a solvent for fats and resins.

LIGROIN (petroleum benzine) is not a definite chemical compound as was the case with the foregoing substances. It boils between 50 and 150 deg. C. and varies in specific gravity from 0.700 to 0.800, so that this article should be bought on explicit specification. Ligroin is found in commerce under the name of Petroleum ether, Petroleum benzine, and Naphta. In order to judge the value of Ligroin a distillation test should be made and a record kept of the percentage which distills below 100 deg. C. (= the boiling point of water). Ligroin is an excellent solvent for fats, oils, resins and colophony.

BENZOL (coal-tar benzene: $C_6 H_6$) is a definite chemical compound having a boiling point of 80 deg. C. and a specific gravity of 0.874. It is preferable to Ligroin for removing grease from valuable fabrics as all trace of it can be removed by heating the fabric to 85 deg. C. (185 deg. Fahrenheit). It is found in coal-tar to the extent of 1 to 1.5 per cent. and is obtained from this source by a series of fractional distillations. Pure Benzol should not discolor concentrated sulphuric acid when mixed with it in equal volume.

TURPENTINE ($C_{10} H_{16}$) is a colorless liquid of the specific gravity 0.86 to 0.89 and a boiling point of about 160 degrees. It is prepared by distilling the sap of certain coniferæ with steam. The chief constituent of turpentine is Pinene, a liquid which boils at about 159 degrees. This oil is added to certain printing pastes in order to prevent frothing, in fact it may be used in any case where frothing is to be feared, as it is insoluble in water. Turpentine is a good solvent for many fats, for resins and varnish stains.

There is in preparation a Guide of Ecuador, which Consular Agent George D. Hedian, of Esmeraldas, Ecuador, says will contain names of plantation owners, the taxed values of their properties, etc., and which, he states, will be obtainable through the Ecuadorian Minister, Washington, D. C.

FAST GREYS AND BLACKS.

The Indanthrenes cover a series of colors lacking only a black. It is to be noted, however, that Indanthrene Green B, when dyed upon the fibre, can be changed by a treatment with suitable oxidizing agents in a neutral, acid, or alkaline state, to a black possessing very high proportions of fastness. The oxidizing agents which may be used for this purpose are Hypochlorite of Lime, Bichromate of Soda, Persulphates, Nitrous Acid, etc., The shades produced after treating with Nitrous Acid may then be easily toned by further treating with Phenols or Amines. As an example for 10 kilos. of cotton yarn: Six kilos of Indanthrene Green B, six litres of Caustic Soda 30 degrees B., 1.3 kilos. of Hydrosulphite, are added to 200 litres of water to make up the dyebath. The bath so prepared is then treated to 60 degrees C., the previously boiled-out material entered and worked for three-quarters of an hour. At the end of this time the yarn is removed, washed, lightly soured, washed, and treated for half to two hours in a cold solution of Hypochlorite of Lime at ½ degree to 1 degree B. It is then washed thoroughly and soaped at the boil. For purposes of shading, other dyestuffs may be used with the ground color, for examples, Indanthrene Violet RT and Indanthrene Dark Blue BO, which are both fast to chlorine. The color given by the Indanthrene Green may be changed also by working the dyed yarn for half an hour in a cold solution of two grammes of Nitrite of Soda and four grammes of Sulphuric Acid 66 degrees B., per litre of liquor, then washing and soaping.—*Textile Colorist.*

A NEW HOME FOR THE AGASSIZ ASSOCIATION.

Because of the peculiar vagaries of a human mind, the Agassiz Association, who have been located at Arcadia, Sound Beach, Conn., for the past two years, must give up their present quarters. They are doing wonderful work and much experimental and scientific research has been accomplished in the cramped quarters at Sound Beach.

The following extract from an open letter to members by President Edward F. Bigelow is self-explanatory, and should meet with an immediate response from all readers of the *Guide to Nature* and others interested in nature studies aided by the use of the camera and microscope:

"The time has come for the Agassiz Association to have its own building on its own land—its own home, even if but a small one, under the sole control of the Board of Trustees. To that end we ask you to give, give what you can from a cent to thousands of dollars.

"Let us have at least a $10,000 building, and we want it just as soon as possible. That means please send your contributions now. The A. A. shall go on; your president will work with more devotion than ever to the cause."

Consul Church Howe reports that the total value of declared exports from the Manchester district in England to the United States and the Philippines for March, amounted to $1,613,231, an increase of $39,601 over March, 1910. Increased shipments of cotton velvets continue to be made, the value of American purchases for March, 1911, amounting to $136,308, as against $13,166 in March, 1910.

Practical Problems Discussed by Cotton's Readers.

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all.

MANAGER EXPLAINS HIS POSITION ON THE RAILWAY HEAD.

BY MANAGER.

I have read with much interest in the issue of May the several replies to my letter in the April issue. It is a pleasure to reply to them, and I trust this article will be of interest to my critics. Railway heads have been in use very many years, far beyond the life of the oldest carder, or manufacturer now in the harness. And they are still in use, which may cause my critics to say, "all the fools are not yet dead." But I can say with confidence that while many of our best manufacturers are old, they are not excelled by our younger men. I do not apply this in any way to myself, or because I have been in the business many years.

The advent of the railway head came long before I knew anything about cotton manufacturing, yet after I went into the mill, there was in use many common wood flat cards, taking the sliver into a can through a coiler, much the same as is now being done with the revolving flat cards; this drawing being put up behind drawing frames, using five lines of rolls, doubling five and six into one and using three processes of this drawing. To eliminate one process of drawing, and even up the sliver the railway head was introduced, and the claim for it was: to take up a number of slivers direct from the cards, (8 to 12), onto a conveyor called the railway, which was either a leather or canvas belt, later being made of rubber. The slivers being laid parallel, side by side and evenly carried to the head, were drawn out to a desired weight, then carried to the drawing frames, with two precesses, and on through into yarn the same as now.

This railway, and the head, was named the railway head, and has so been called from its birth. I have never known any other machine being called by this name, without some context, or subjoin to designate it, as the breaker railway head, or the improved railway head. Now "F. W. G." was talking of the railway head, and I replied to him, as to that machine, and none other. The peculiar part of it is that all my critics fell into the same error, not one makes mention of the improved railway head. "Another Manager" speaks of both "F. W. G." and myself, and says we are both right, and yet does not explain how we both can be right in speaking of the railway head. Some readers, like "WAG," who apparently never saw the railway head, but have seen the improved railway head, laugh at my statement. Now, gentlemen, I know what the railway head is, also the improved railway head, and how it came about, and why, and perhaps I saw the improved railway head and it workings long before either of my critics, but of this I am not sure, nor does it make any difference.

I have seen the revolving flat cards connected, six and eight into a line and the railway head attached, same as the common top flat cards, and they worked very well, especially so, if the picker laps were kept even as they ought to be, no matter what cards are used, or how the work is handled after carding. If you were speaking of cards, and your mind, and writings were intended for the revolving flat cards, would you speak or write it cards, or would you designate the kind of cards you were writing about? There are several kinds of cotton cards in use, the so-called "top flat cards," the Foss & Pevey cards, the Atherton cards, the "roller cards," and the revolving flat cards, all used today for carding cotton. There are several kinds of speeders used, as well as many kinds of spinning spindles. Would you not say what kind of these machines you had in mind if you were to condemn or give praise to any of them? Then why not speak of railway heads, or the improved railway heads?

I have above stated to what use, and processes we apply the railway heads. The use of the improved railway heads, are to take the sliver from the revolving flat cards or any card using a coiler, and even up the work from the cards with the back roll instead of the front roll, as provided in the railway head, both being of so much value, that every mill ought to use the improved railway head where the revolving flat card is used, or any other card running single sliver into a can. Neither of these machines can even up a short thick place, or a short thin place, as a yard or less will have passed through, before the evener will work. But these machines are just what is needed, if one card is out for grinding, or a lap or two runs out, or you have a heavy, or a light lap come along. On the improved railway head, a single stop motion, may, and does fail to work, thus leaving one sliver out, this will even up, or if one can of sliver comes up heavy or light, then it is seen at its advantage. But there is no need to dwell on this, as my critics know all about this improved railway head, and may not the railway head, but they both act alike, when heavy or light places come along, only from reverse action.

I do not plead guilty to anything I have said in former article on this subject, I will not even say that I did not have any idea of what "F. W. G." was talking about, for I knew one of two things, he was talking of the improved railway head, or was quite ignorant of the railway head, and I am pleased to know that he is "O. K.," but I am a little suspicious that some of my critics need to read up on manufacturing in days gone by, it will do no harm and might do some good.

I am going to state something that my critics will perhaps come back on me about and want another article to tell them why I make the statement. I can take the old top flat

card with the railway head and two processes of drawing and make more even work than can be done with the revolving flat card, and the improved railway head with like care. Now, boys, who is in the woods, or the lame duck. Let us make this instructive, not aim to amusement. I am not too old to learn, and to close this article, I will say if I knew as much now as I thought I knew when I had been in the mill five or ten years, I would be a most valuable man.

THE CAUSES OF TROUBLE FOR A WEAVER.

BY E. M. H.

A weaver's troubles are many; commencing when the cotton is bought, if it is not properly graded, and everything from there on through the whole operation that is improperly done causes trouble for the weaver. I will not go back so far, however, but will begin at the spinning room with the supposition that we have good even roving to start with. Even with that, there are many little things which when taken separate do not amount to very much, but taken altogether makes a very inferior grade of yarn. Some of these things are long drafts; poorly covered rolls; bruised steel rolls; improperly weighted rolls; stuck rolls from want of oil and cleaning; slack bands; bad rings; ring travelers too long without changing; too much or too little twist; too much twist in the filling is especially bad on account of its kinking in cloth; and last, but not least, is the spinners' fanning their frames while running, causing bunches of dirty or oily waste, or lint to catch and twist onto the thread.

The carder and spinner do not seem to realize the importance of getting everything as near right as possible and only work to get the product off of their hands onto the next fellow. Many get angry if they are shown anything bad. If every overseer from start to finish, would do everything possible to turn out a superior product we would all be better off and the dividends would be greater. Wages would be better and there would be less changing from superintendents down to sweepers. Everything that can be done to help the weaving in any part of the mill is to the interest of the company. Overseers should lay aside all personal differences, especially on the inside and settle them all on the outside.

Spooling is the next process after spinning and like all other machines can be over speeded, which will injure the yarn. It will cause the yarn to break excessively, making more knots in the yarn. Spooler hands are careless about tieing the ends and by getting the ends from several bobbins in one hand at one time they get loose ends in the knotter and tie them all up in the knot. Also when they turn the yarn loose after tieing it they will let it kink, and they will also get all their ends up and fan off. I have seen spooler hands do this, and while they were at it you could hardly see the machine for short lint and bunches of waste.

As the yarn has a rotary motion as it is passing from the bobbin to the spool, it will catch a lot of this lint which will go on through to the loom before it causes any trouble. Most all spoolers are made with adjustable thread guides and if set properly will stop all lumps of any size from getting through. To do this will, of course, cut the amount of yarn that can be put through with the guides set so everything can pass. The question is, which is the cheaper, to stop gouts at the spooler, or let them go to the loom and break, most always causing a pickout. Even if it only breaks, would you lose more in tieing the thread at the spooler or at the loom?

Warpers are next in order for single work and should be very carefully looked after, otherwise much trouble can be caused here. The man in charge should keep all parts properly adjusted and oiled. They are usually attended by girls, and good careful girls should be selected for this work. Much care should be taken to get the beam as smooth and uniform in size as possible from one extreme end to the other, and not have high and low selvages, which will cause it to run bad on the slasher and also a bad running selvage on the loom, which is the most aggravating thing that a weaver has to contend with as it is impossible to make a perfect piece of cloth with a bad running selvage.

Slashing comes next, and I don't suppose any two men have exactly the same ideas. There are so many sizing formulas that it is unnecessary to mention any special one, for different locations and climatic conditions makes it so that the same preparation will not give satisfactory results at two different mills on the same class of goods. The best way I think is to find a preparation that will suit in your own case and use that and do not always be changing and trying a new compound of some kind.

Good running warps depend to a great extent on how they are sized, and the very best yarn can be spoiled when it is over stretched, or not sized right. Do not run your slasher too fast. Have just enough of steam in your cylinders to dry properly, and not enough to bake your size and yarn. Never change any threads in the comb at the front of the slasher while running, but wait until you doff off a beam and then straighten your lease or if necessary run strings and release. Care should be taken to make as little waste as possible. Start off on your loom beam as nice as possible and not make several yards that can't be woven, thereby causing loss.

A CREEPING CHECK.

BY STUDENT.

All fixers should desire it as it is the best known check. Anything which interferes with the gradual checking of the shuttle is detrimental to good weaving. Therefore, anything tending to cause the shuttle to rebound is not desirable. Again, to reach this desired end, a check strap must not have a tendency to spring, or in other words it must give freely to the end of the box. My ideal setting is, have screws through the check strap about seven or eight inches from the end of the box, and attach as close as possible to the bottom of the same. This gives a gradual slant to the check and a square surface to the picking stick. It also leaves the check free to move at least three inches, which is sufficient to give all needed results.

EMERGENCY WORK IN THE WEAVE ROOM.

PRACTICAL REMEDIES FOR ODD TROUBLES AND BREAKS THAT OCCUR ON LOOMS.

BY GEORGE RICE.

Every loom fixer has some emergency repairing to do at times. There are, of course, regular rules for fixing certain parts of the loom, and there are also assorted extras and duplicates of various parts of the loom, including the necessary bolts and set-screws for use in connection with the adjusting of the parts. Regardless of all this fine equipment which we find in use in the modern loom-fixing department of a first-class cotton mill, there are always a number of unusual or emergency repairs to be attended to. The fixer may have his well-arranged tool chest with everything necessary in it. But there are certain fractures and defects constantly occurring in the common cotton loom that cannot be anticipated. This is one reason why there are so few printed rules on loom-fixing. There are unexpected breaks occurring right along. The man who can handle these unusual imperfections is the man who can best attend to the emergency work of the room. Hence, in traveling through the mills we come into contact with fractures in the machinery of a complicated and oftentimes novel character.

The crank shafts of the average cotton loom are well made as a rule. The metal is forged and the crank portion strengthened with shoulders and flanges. There are certain types of cast iron crank shafts in use and likewise steel crank shafts, according to the character of the work demanded from the loom. While the heavy carpet and woolen goods loom calls for wrought iron crank shafts, the speedy little cotton loom does well with a cast iron shaft. Sometimes the shaft breaks, and again the crank breaks as in Fig. 1 at A. A good way to fix such a break is to bore straight through the side. You will have to remove the shaft from the loom for this purpose. Put it in the drilling device and bore straight through crank shoulder and crank pin. A half-inch hole will be sufficient. Then insert a bolt and head up the bolt. Or you can use a nut and washer on the threaded end of the bolt. This bolt secures the fractured side tight to the other side. I have seen loom cranks in use for years after being repaired in this way.

Fig. 2 is given to illustrate a method of making a box hold fast in place. All fixers have had their troubles with slipping boxes. The bolts are tightened again and again. Braces may be put in and still the box slips. Some new bolts may be substituted and still the box may slip. Our method consists in boring a quarter-inch hole through the box and the loom frame so that a steel pin C can be driven in. This steel pin holds the box securely and it should give no more trouble. Then if a piece of the cap breaks out as at B, as often happens, you can substitute a new cap or recap the original cap with a strip of sheet iron. Or if the broken piece is small, you can throw it out and run without it.

If a cog snaps from a gear, I would replace the gear with a new one. But the new one is not always forthcoming. The weaver wants the loom running, and the mill cannot afford to let the loom stand. Hence it is up to the fixer to do an emergency repair. My plan consists in drilling a hole in the place in the gear rim where the cog was broken off. Then I cut threads in this hole with a tap and simply screw in a piece of a bolt as at D, Fig. 3. Then file off the top and sides of the bolt section to the shape of a cog as much as possible like the original, and let the loom run with this until you can get a new gear. The loom will probably run for months and years on such a repair.

When the sleeve of a box gets so badly worn that the shaft is permitted to jump up and down in the bushing as at E, Fig. 3 A, it is time to do something. You cannot get a steady pick on a loom if the shaft boxes are worn out like this sample. You may not have any new boxes or sleeves. Then re-babbitt the box. Pack clay about the box with the shaft properly centered in the box. Then clean off the grease and pour melted babbitt metal into the box through

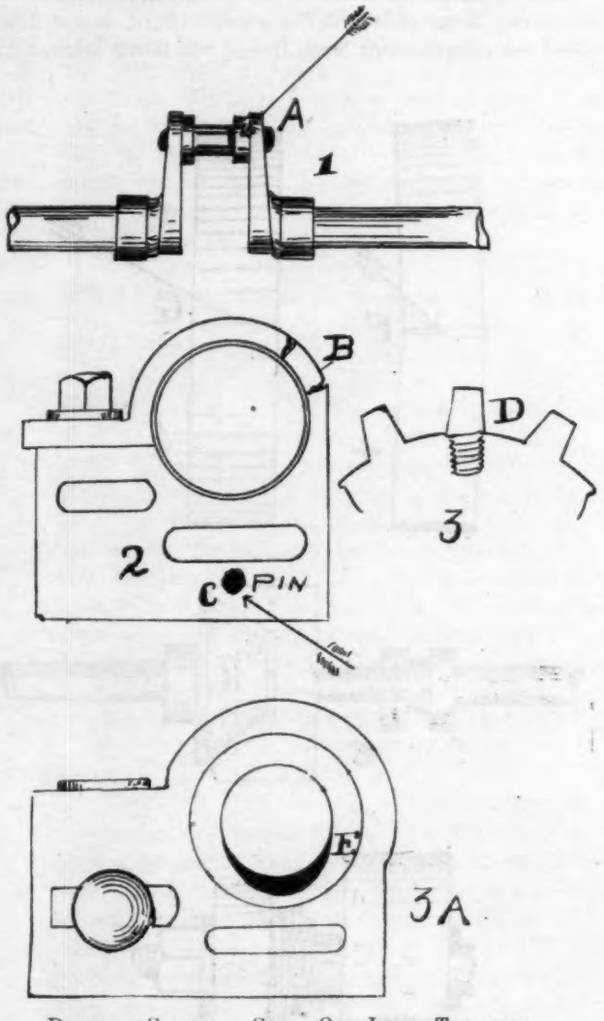


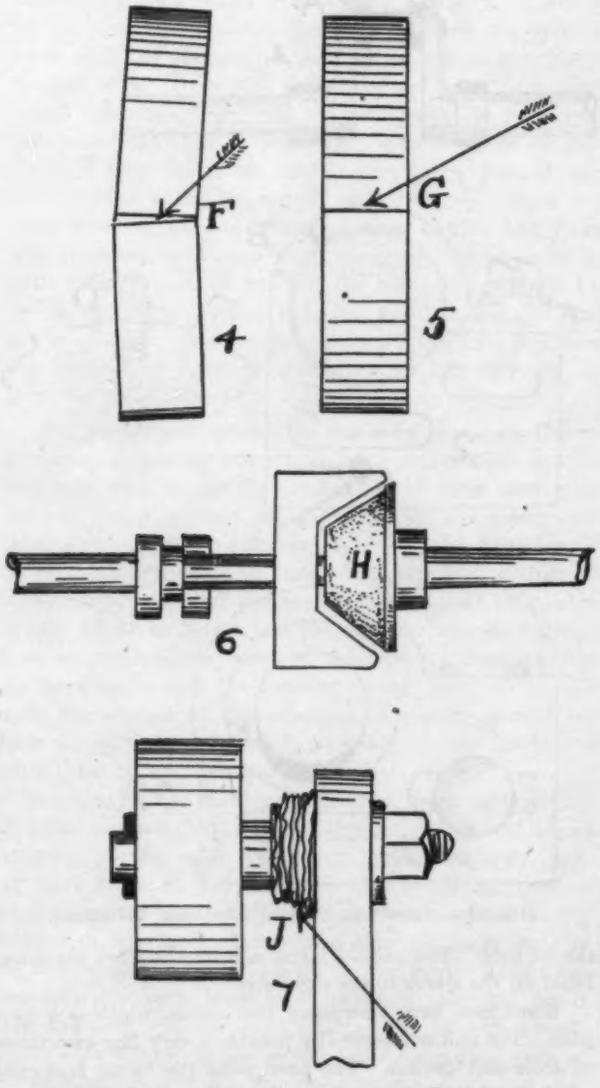
DIAGRAM SHOWING SOME ODD LOOM TROUBLES.

the oil hole. The babbitt metal will fill the worn place and build up the sleeve to the right size.

Some men have emergency tool chests, which is a good plan. The mill will generally provide a very fair assortment of tools and devices. The fixer joins the fixing fraternity of the mill with the understanding that he is going to be furnished with the right tools to work with. He signs a receipt for a certain number of wrenches, hammers, files, screw-drivers, punches, level, straight-edge and other tools and instruments necessary in his work. But it is seldom that the fixing department of a cotton mill is fitted out with the required emergency tools. The fixer is supposed to go to the machine shop to get unusual work done, but often

the machinists are busy. The average machinist is not extremely obliging when it comes to repairing something broken in the loom fixing department of the mill. The average machinist assumes that the fixer broke the part through carelessness, and he does not like to stop his regular work on the water wheel, the engine, the shafting of the mill, etc., to repair a part presumably broken through the bad work of a loom fixer. That is why some of our fixers carry with them a so-called emergency chest. Such a chest contains the necessary tools and devices for doing unusual work. The emergency chest also has an outfit of court plaster, sewing thread, and other articles useful to the fixer in case he gets injured.

The emergency chest should be among the possessions of all fixers. A set of iron drills, a collection of special files, speed test gauges, spirit level, special belt lacing outfit, etc.,



DIAGRAMS TO ILLUSTRATE TROUBLES AND REMEDIES ON A LOOM.

may be carried with profit. The overseer is always pleased to see a fixer report for duty with a chest of special tools and devices. It indicates that the fixer is a professional. I have seen very fine, hardwood, brass trimmed chests of this order. A chest should be made that is convenient to carry. It should be no larger than necessary to hold the special tools.

As to the balance wheel of the loom, some of the old-fashioned looms were fitted with regular fly-wheels. It was supposed that the loom could not be operated steadily unless some sort of a balance wheel was keyed to the driving shaft of the loom, along side of the belt wheel. But in recent years the fly-wheel of the loom has been dispensed with. Occasionally the fixer finds such a loom, and about all he can do is to keep the wheel in proper shape on the shaft. Sometimes he takes the fly wheel off thereby reducing weight. Some men on the other hand have been known to put a fly-wheel on a loom shaft, hoping thereby to overcome certain unsteadiness in the action of the loom, and which unsteadiness is usually due to defective loom-fixing.

While the balance wheel of the loom has been removed in most mills, and while the majority of manufacturers of looms do not put on a wheel of this kind now, the remaining wheels of the driving shaft require special notice. These are, of course, the tight and loose pulleys. The way in which some fixers strive to run these pulleys is astonishing. In one mill where everything appeared to be in favorable order, I saw the belt of a certain loom wabbling over on one edge of the fast pulley. I noticed that the fast pulley was in bad order. When the loom was stopped it could be seen that the wheel was warped out of line as in Fig. 4. The two edges of the wheel adjoining at F were sprung outwardly, so that the wheel was detorted as shown. In order to get this wheel back into line, we had to file off the irregular edges of the hub.

The flanges of the hub had been unevenly cast and the boring was uneven. However, with some pieces of thin sheet metal, and a little chipping and filing, we managed to get the two sides of the wheel even. Then the hub was bolted securely. The lips of the flanges of the halves were secured with threaded bolts and the wheel was then held firmly with the juncture even as at G, Fig. 5.

In some looms you will find that instead of the ordinary fast and loose pulley, there is a gripping fractional combination of the order shown in Fig. 6. This type of frictional clutch is also used on some of the spinning frames. The clutch is so designed that it depends upon the frictional contact of the leather covered face of the inner wheel H and the metal face of the pocket wheel. The cone side must grip with the pocket side evenly and firmly, otherwise the two surfaces will slip. There should not be any slipping of the driving gearing of the high speeded loom. In the fixing of these clutches, it is a good plan to make the adjustment quite complete, that is, you should go over the entire device. The keys and set screws should be examined and tightened if required. The leather facing will as a rule be found in a slippery, greasy condition. I saw one party force some pulverized rosin into the opening between the two wheels so as to cover the leather face cone with the gummy stuff and make the surfaces adhere. The rosin caused the surfaces to cling together so hard that the weaver could not stop the loom when required and the belt had to be knocked off. Then the rosin faced covering had to be washed off. The best way is simply to scrape the leather surface H, with a knife, sandpaper or emery paper. If the weaver through ignorance pours oil into the frictional clutches, as weavers sometimes do, you will have to give the weavers some lessons in the care of the frictional clutch.

Lubricate the bearings of the clutch freely, but see to it that the weavers do not get any of the oil on the leather cone surface. Also see that the leather cover is properly secured to the metal surface. If the rivets are loose, tighten them. If the leather lap is open, re-cement it. If the copper rivet heads project, hammer them down. A periodical inspection of the frictional clutch of the cotton loom will overcome many of the difficulties that usually pile up.

Slothful work on the part of the fixer must be condemned. Still there are times when the emergencies of the case require that some apparently shiftless work be done in order to keep a loom going. As an example, it happened that a certain loom was in service weaving a pattern which had to be finished for the market. The picker ball stud had broken off, and the fixer was unable to replace the stud with one of the proper proportions, the right sizes being all out. Therefore he fixed up a stud as in Fig. 7. The stud was too long. In order to make up for the waste space of metal length the fixer simply wound the additional space with steel wire as at J. This steel wire acted as the necessary filling quantity for the void which existed. Washers might have been used, in case the wire was not available. Of course a job like this can not be commended except for emergency uses. As soon as the goods required to fill the order were woven, the loom was allowed to stand until a new stud of the right pattern arrived.

HOW TO SET A CARD.

BY TENNESSEE VALLEY.

We must have practically a perfect lap to begin with and not overlap them too much when putting on a new lap, only enough to prevent making a light sliver for a few yards. Always make the laps as light as practicable for them to be and allow the picker room to keep up, for it is better to card fast with a light lap than it is to card slow with a heavy lap. Set the feedplate to 17 gauge. If it is set closer it has a tendency to weaken the fibre, and if it is set too far off from the licker-in, the licker-in will pull the cotton off in flakes from the bite of the feedplate. Set the licker-in to the cylinder to 7 gauge. If it is further from the cylinder than this, the cylinder will sometimes fail to strip it clean, and will cause cloudy carding.

Run the back half of the cylinder screen up so it will be 22 thousandths from the cylinder, and the solid half of the licker-in screen to where it will be not quite close enough to rub the licker-in. Set the outer edge of the ribbed half of the licker-in screen to ¼-inch from licker-in. Get the screens true and get all of the pockets out of them so that lint will not accumulate in them and jerk through all at once and cause a heavy place in the sliver and cause the end to come down between the doffer and calender rolls, or at the coiler head.

Next comes the mote knives and it is important that they should be set right. If nothing but motes and trash are to be taken out, set the knives perpendicular, but if they are to take out short staple with the motes, set them slanting to the licker-in. Mote knives should be set to 7 gauge. Set the lower edge of back knife plate to 10 gauge and the upper edge to 17 gauge. This allows the fiber to expand a little before coming in contact with the flats. Set the flats at the back to a loose 10 gauge and the second and third stands from back to a medium 10 and the two front stands to 9 gauge.

Set the brush that brushes out the flats so that the bristles do not quite reach to the fillet on the flats, for if it does it will push the lint down on the fillet instead of brushing them out and will also roughen up the face of the fillet so that lint will hang to it instead of being brushed out by the brush. It will then have to be burnished out often to be kept clean. Set the upper edge of the front knife plate for the amount of strippings required, which is usually from 29 to 32 gauge and set the lower edge to 12 gauge. Set the doffer to 7 gauge and the doffer comb to 10 gauge and have the comb low enough for the web to "bag" a little between the doffer and calender rolls.

For an ordinary amount of flyings set the cylinder screen on the back to 22 gauge, middle to 29 gauge and the front edge of screen to ¼-inch from cylinder. The closer the middle and back settings are to the cylinder, the less flyings the cards will make, and the closer the edge next to the doffer is set to cylinder, the more the good staple will be thrown out by coming in contact with the edge. This is after the settings are already 3/16-inch to ¼-inch from the cylinder.

With the cards that are made now there is no reason why a room with 50 to 100 cards should not all be set the same. Get one card right and set them all like it. If the instructions here are followed and the licker-in and the other parts are given the attention they should have, if the breaking strength of the yarn isn't around standard then the cause is somewhere else. If a man will notice when visiting mills he will see some cards where the tenders have very little time for anything except to put up ends, on account of the cards running bad, because the carder and his assistants are too indifferent, or I might say too "lazy," to give the cards the attention they will have to have to produce good work. In ordinary weather there is no reason at all except "laziness" why a card tender should have to put up an end only at stripping time.

SANITATION AND COTTON MILLS.

BY W. M. S.

Sanitation in cotton mills is very important, but it is often neglected. The floors should be scrubbed at least once a week, also the close places around the machinery should be looked after. Spittoons should be used more than they are today in cotton mills and be kept clean all the time. The sanitary rooms in the mills should be looked after and scrubbed twice a day; also disinfected every morning. The operators should have good, pure drinking water in the mill. The village should be looked after as much as the inside of the mill. Every spring the mill officials should see that the people in the village have a general yard cleaning, rake out from under all of the houses, burn all trash, also sprinkle lime around and under the houses. The writer thinks that hog pens should be avoided in the village. They should be kept outside the village in one place. The mill officials should have all ditches in the village kept clean so the filth and trash will drift away, also keep the wells in good condition. The mill pond should be drained once a year. It should have a good spillway the year round and by no means have stagnant water in or around the mill village.

A GOOD WAY TO TEST TRAVELERS.

BY H. A. W.

Travelers, as we all know, form a very important part of ring spinning in regard to the running of the work as well as economy. Travelers that are too soft will give trouble, also decrease their durability; if they are too hard they will be brittle and will break frequently in putting them on the ring, all of which tends to run the cost up.

I have a method of testing travelers that I find very useful. From each new order that comes in, I test several travelers out of one box of each number. To do this I take a ring to correspond with the traveler, (in regard to flange), and place from twenty-five to thirty travelers on the ring, then holding the ring firmly in hand, using the thumb of the same hand to press the travelers against the inside of the flange, with the other hand I take a steel awl, placing the point of the awl under the traveler, (opposite the thumb), just under the outside flange, using that part of the ring between the flanges, (if it is a double flange), for a rest. Then bear down slowly on the large end of the awl until traveler breaks or straightens out, this giving you an idea of the strength of your travelers, as if too hard, or brittle, they will break with the least pressure, while if too soft they will straighten out. Too many of such poor grade travelers should be replaced by the maker, but overseers should use their own best judgment in this respect. Testing travelers in this way prevents the travelers from getting into the work unless they are all right and may tend to lower the cost of your traveler bill.

A CARDER'S TROUBLES.

BY B. B.

A carder should be a man who thoroughly understands all of the machines in his charge. The picker room will cause more trouble for the carder than anything else except sometimes the stock he has to run. This is one trouble that a carder has, another is, he is held responsible for much of the bad work that is done about the mill. If the work gets too light or too heavy he is the one that is looked to for an explanation. But a carder can overcome some troubles. Just start in the picker room and see that all of the machines are in as good repair as it is possible to get them. See that the beaters run well up to a speed of 1500 r. p. m. This is a good speed for one to one and a quarter inch cotton. This will save you a lot of trouble that you will otherwise have. See that the laps weigh within one-quarter of a pound of the standard. This will give good even roving for the spinner. Then see that your cards are set properly and your troubles should cease to some extent.

RULES AND SUGGESTIONS FOR CARDERS.

BY E. C. B.

When putting on the laps, the greatest care should be taken to prevent the card from choking up. The laps should be very carefully handled. The card should be kept clean, well oiled and sharp. For ordinary work it is enough to grind once in four weeks. They should not be ground too heavy, nor yet too light. Let them run about three hours. Do not grind as heavy on the doffer as on the cylinder. The reason for this is, the doffer is so much smaller the wheel does not have to grind over so large a surface as when grinding on the cylinder. Have all the wires straightened up before the grinders are put on. In grinding the flats the greatest care should be taken to see that they are ground alike all the way across. When the flat comes in contact with the grinder see that it touches lightly and evenly and not too hard on the edge. As the flat leaves the grinder roll it should not be allowed to get slack. See that the bands that drive the cylinder rolls are tight, so that the grinders will have the same speed at all times. Have a burnishing brush to clean the flats. It will keep out all nips and motes. It is necessary to have all the flats in good condition to get clean work.

For stripping out I would recommend three times a day. The card clothing should be kept free from short fibers, nips and motes. What will accumulate in the teeth of the card stripping brush should not be allowed to go below the knee of the teeth on cylinder or doffer as it is liable to loosen the card clothing. The stripping must be looked after very closely. To prove this is true, before you strip out look at the sliver—you will see little nips, then examine it after you have stripped and see how clean it is. I would recommend when stripping not to stop a whole section at once. Stop one card, strip it and when the brush is being cleaned have the helper start it up and stop the second one. When strippings are removed he will be ready to put the brush on again. It is a well known fact that after a card is stripped the sliver will be lighter so in stripping in this way, you will not get all the light work at one time and you will not lose in production.

The card grinder must be a careful man and not be required to do much other work. In setting a card I would recommend the following limits:

Doffer from cylinder, seven thousandths of an inch;

Flats from cylinder, back, eleven thousandths of an inch;

Flats from cylinder, front, nine thousandths of an inch;

Licker-in from cylinder, seven thousandths of an inch;

Feed plate from licker-in, seventeen thousandths of an inch;

Licker knives from licker, seventeen thousandths of an inch;

Cylinder screen from cylinder, twenty-two thousandths of an inch;

Lower edge of back knife plate from cylinder, eleven thousandths of an inch; and front edge eleven thousandths.

Have the plate and licker-in taken out and cleaned and set once every three months and flats set every six months. When setting front plate, the closer you set it, the less stripping you will get out, and the farther away you set it, the more you will get out. I think if proper regard is paid to some of these little things better results will follow and you will have a uniform web which will be quite free from impurities. Take some of the web and hold it up before the window and if it is free from nips it is good carding. I would not recommend a card to run too fast—about all revolving flat cards run cylinder 165 revolutions per minute and doffer from 12 to 18 revolutions per minute. The best rule to get the speed of doffer is, as it runs very

slow, count the number of spokes in the doffer gear that passes a certain point in a minute and divide this by the number of spokes contained in the gear. Suppose 74 spokes pass a given point on the gear in one minute and there are five spokes in the gear, then $74 \div 5 = 14.80$ revolutions per minute for the doffer.

If what I have here stated be followed you will not have to make any excuses to the manager about bad cotton, or the machines being left in bad shape. If you have been only a short time in a place you can judge a man's ability pretty well by his talk. If nothing is right and everything wrong you can size him up to be quite a "bag of gas" and the superintendent who will take stock in such a man is sure to be deceived. Give me the man who will adapt himself to circumstances, take off his coat and work and let the results do the talking.

ASKS FOR DISCUSSION.

BY DOUBLE U.

EDITOR COTTON:

I note from time to time in your department of practical problems that some one asks a question for your readers to answer. I wish to submit a little problem that I will be glad to have discussed by other readers of this department. Suppose a mill that had been devoting a part of its machinery to the making of fairly coarse cotton yarns from American upland cotton, should change over and begin running Egyptian cotton, making combed thread yarns and producing some reverse twist out of the carded cotton. Suppose also that after this yarn is made, while it is perfectly even, its breaking strength is weak. Where should we look for the cause?

NEW MACHINERY AND TRADE NOTES.

INDANTHRENE.

With all the great progress manufacturers have made in elevating the quality and tone of cotton fabrics in various branches of spinning, designing, weaving and finishing, they have labored under the great drawback to the harmony of this progress on account of the lack of fast colors for the general dyeing of cotton. In former times the cotton goods were the cheap goods and were not patronized by people of "tone." They were looked upon as coarse fabrics suitable only for the lower classes.

We easily realize this when we consider that the cotton industry is really only about a century old and that the progress and development of spinning fine yarn, and weaving of fine fabrics is necessarily slow. The manufacture by the Badische of indanthrene fast colors has given the cotton manufacturer the one quality heretofore lacking to complete the perfection of cotton fabrics. Today the best dressed men and women and those who must be considered as requiring "tone" in their apparel wear numerous articles of colored cotton. In this connection it may be stated that cotton has actually encroached upon the domain of that regal texture, silk. The completeness of the conquest of colored goods in the world's best trade has been given its final touch by the discovery and use of indanthrenes. Further information may be secured from the Badische Co., of New York, Boston, Providence, Philadelphia, Chicago, San Francisco, Montreal and Greensboro.

The UNITED STATES FIBRE PRODUCTS CO., INC., manufacturers of mill spools and fibre specialties, 831 Manton Ave., Providence, R. I., are presenting to the trade something unique in the line of vulcanized fibre spools with interchangeable heads. This interchangeable head feature will be readily appreciated by practical mill men in all lines of manufacture, as one of the worst defects of the ordinary wooden spool is the fact that after its heads get an edge split off, the spool itself is of no more use and is thrown into the scrap. With this interchangeable spool, if from any chance these almost unbreakable heads should become damaged, they may be easily replaced by others at the mere cost of the head only, as the spool itself is not damaged by any injury which may happen to the head. This makes a great saving in up-keep cost and also, as they may be shipped knocked down, enables considerable saving to be made in shipping space and freight charges.

This company also manufactures permanent spools from the same materials as the interchangeable spools with vulcanized fibre heads, birch barrels and maple bushings, with the difference that the plugs are glued, and the spools therefore are not so readily repaired as the interchangeable spools. Each spool shipped by this company carries with it a positive guarantee that it will not warp or sliver. Samples and prices of both spools will be forwarded upon request giving dimensions.

To produce uniform garments you must have uniform cloth. The Shields Web Folder is designed to take the place of the old style of turning and rolling machines, laying the web in flat folds 34 inches long. If using pipe dryers in the dye house and rolling the web as it comes off the pipe after being dryed, the goods when opened on a cutting table will be in an unsatisfactory condition. As the roll increases in size, the tension becomes greater, taking the cloth from the width and stretching it in length, with a certain amount of heat and moisture remaining. Cloth set in this condition will be harsh, stiff and uneven in width. The number one folder manufactured by the GRAND RAPIDS TEXTILE MACHINERY CO., Grand Rapids, Mich., will overcome this unsatisfactory condition, as it insures the uniform width of cloth which is absolutely necessary in producing uniform garments. The machinery is automatic in every detail laying the web in flat folds in equal length. After the required amount of cloth has been folded the table is lowered until the truck wheels reach the floor when the table can be pulled out. The bale of folded cloth is then tied at each end thus holding the folds together. These bales can then be tagged showing the quality, size and quantity of cloth and removed to the stock room, thus saving space keeping the stock clean and making invoicing easier. Further information can be secured by addressing the manufacturers.

A MODEL REED FACTORY.

Situated at the corner of Myrtle and Pennimann Sts., New Bedford, Mass., is a commodious factory building formerly occupied by the Cornell Stocking Co., but acquired in November, 1910, by its present occupants, WILLIAM H. KNOWLES & Co., manufacturers of loom reeds. This company began the manufacture of loom reeds in January, 1910, but the reputation of their goods was so high and the business increased to such proportions, that by November of the same year, they were compelled to increase their capacity, and at that time they purchased the factory and grounds where they are at present located.

This factory consists of a three-story brick building 75 x 45 feet, practically new and in splendid condition. It has a cement basement, engine and boiler rooms, elevator and all the necessary equipment for their business. The rooms are well lighted and high studded. The 40-horsepower engine is of Corliss type and the plant is equipped throughout with automatic sprinklers and electric lights. In the basement is the most improved wood working machinery, which enables them to make their own reed ribs, as well as to supply many other reed manufacturers. On the first floor are the offices and the machinery for reed setting and finishing. The second floor is devoted to rolling and polishing the wire and the third floor is used for a stock room.

Present business pressure, however, is such that they are already considering the installation of additional machinery in order to keep up with orders now on their books. During the short period that this concern has been in business, their products, consisting of reeds for cotton, woolen and silk weaving, slasher combs, striking combs, lease reeds, and metal reeds of all descriptions, have made a most remarkable record for themselves, due to their high quality. Only the best quality of material is used in the preparation of all their goods and this material when combined with the high grade of workmanship employed naturally produces a superior product. The manufacturers will gladly furnish prices and general information upon application.

BIG RAMBLER SALES.

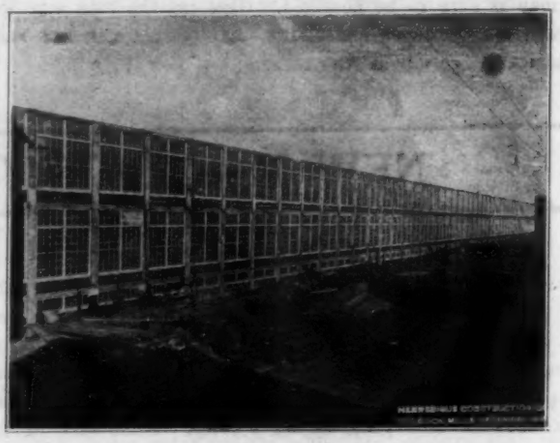
Sales of cars of better quality in the metropolitan centers throughout the country during the past month have surprised even the most optimistic and dispelled the impression abroad a few months ago that the records made in 1910 were not to be beaten in 1911.

C. P. Rockwell, sales and service representative for the Rambler in the New England States, claims the record for that section, having previous to March 18th sold sixty-three Rambler cars in forty-three working days. Every one of the sixty-three was an actual sale and specifications with date of delivery with not a stock order included in the number.

In reporting to THE THOMAS B. JEFFERY CO., Mr. Rockwell said, "During the Boston show we sold seventeen cars and during the week of March 18th, thirteen Ramblers were sold, making a total of thirty for two weeks." San Francisco, Milwaukee, Chicago, Cleveland and New York—the other leaders in Rambler metropolitan sales—are not far behind the Boston record.

A REINFORCED CONCRETE COTTON MILL.

The Maverick Mill Corporation, of Boston, Mass., has recently erected four units of a comprehensive plan of mill development on their land in East Boston, Mass. The mill building is two stories and basement, 130 x 550 feet, with space for 61,400 spindles, having all columns designed to carry an additional story. The weave shed is one story, 230 x 340 feet, with space for 1,235 Stafford looms. The first floor of each building is raised above the ground to allow for the usual shafting area. A two-story detached



office building 30 x 40 feet and a powerhouse 91 x 62 feet complete the present plant.

Reinforced concrete skeleton construction with tile exterior walls and cement finished floors was used throughout, the clear story height in the mill being 15½ feet and 12 feet in the weave shed. The standard cotton mill framing was duplicated on all floors in the concrete construction, but the use of exterior concrete columns 14 inches wide increased the window area nearly 30 per cent.

Reinforced concrete floors are being introduced at present in several of the Southern mills, but the brick piers commonly used limit the light area to an unfortunate degree. The power plant consists of three 400 horsepower Edgemoor water tube boilers, with Foster superheaters, a 1,500 kilowatt Allis-Chalmers turbo-alternator, Wheeler surface condensing system and Sturtevant economizer with induced draught outfit. The structural work in the above plant was designed and erected by the Hennebique Construction Co., engineers and general contractors, of New York and New Orleans, under the supervision of Lockwood, Greene & Co., the well known mill engineers of Boston, Mass.

William S. Southworth, for nearly thirty years agent of the Massachusetts Cotton Mills, Lowell, Mass., retires and is succeeded by William A. Mitchell, who has been manufacturing superintendent and who assumes the management of one of the best organized and equipped cotton manufacturing plants in the country. The Massachusetts Mills at Lindale, Georgia, were established under the supervision of Mr. Southworth.

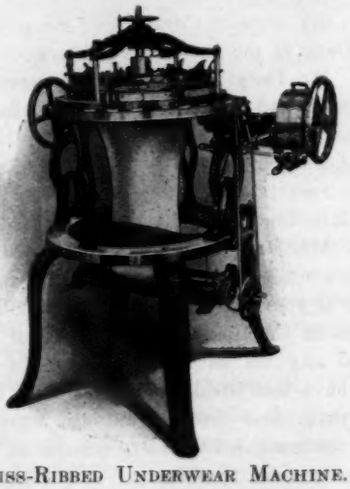
A MOVE FOR IMPROVED KNITTING MACHINERY.

The recent affiliation of Scott & Williams, Inc., and Geo. D. Mayo Machine Co., two of the leading manufacturers of knitting machinery in their respective lines, will have a far-reaching influence on the future production of improved knitting machinery. Although both companies through their advanced knowledge and expert skill have been granted many valuable patents in the past as the result of their labor-saving inventions, they have apparently not been satisfied with even the unusual degree of success to which they have attained.

SEAMLESS HOSIERY MACHINE.

Recognizing the value of united effort and active co-operation in improving the designs of up-to-date knitting machinery, in effecting large economies, and increasing the efficiency of the service to the buyers of their product, the amalgamation of these two well known organizations was arranged. This does not change the operation of the respective plants. The Scott and Williams plant at Philadelphia will continue as heretofore and the Geo. D. Mayo Machine Company's plant at Laconia, N. H., will run as formerly.

The change is in the centralizing of the plant management as well as the selling management, both being under the supervision of Philip M. Reynolds, treasurer and general manager, while Geo. D. Mayo has become a director of Scott & Williams, Inc. The general office is maintained at 201 Devonshire St., Boston, and the selling organizations of the two companies now handle both the Scott & Williams and the Mayo machines. Hosiery and underwear manufacturers can secure machines from this combined organization to meet any and all of their requirements.



SWISS-RIBBED UNDERWEAR MACHINE.

ZINC DUST AND SHERARDIZING.

The economic influence of successful inventions is a study of particular interest. As the subject is investigated one is especially impressed with the wide range of influence. For example one of the most important if not the most important invention from an economic and industrial point of view, of recent years is that of the process of producing synthetic indigo. That as a result of this invention should be the passing of the indigo planters was of course soon apparent, but that the indigo planters would become rubber planters and by their successful effort in this direction at the same time lower the cost and improve the quality of the world's rubber supply was not so obvious.

Only a short time ago a well known English electrochemist, Sherard Cowper-Coles devised a process of coating metals with zinc. As zinc plating is universally called galvanizing, the Cowper-Coles process is known as a process of dry galvanizing. In principle it is simple, the articles to be coated are put in a closed chamber or autoclave similar to what is used in vulcanizing, and moderately heated under pressure with zinc dust. The result is a zinc coating or surface alloying which for many purposes is superior to any other method of galvanizing. The increasing use of the process, Sherardizing as it is called, has occasioned an increasing demand for zinc dust. Now zinc dust is primarily a by-product the principal use of which has been as indigo auxiliary, *i. e.*, to reduce the bi-sulphate of soda to hypo-sulphite, which hypo-sulphite reduces indigo and makes it possible to dye with it. The question of interest to textile mills is whether the demand for zinc dust for Sherardizing is going to be sufficiently great to cause the price to advance. In our opinion it is, at least for a time. When the price of zinc dust goes sufficiently high to make it an object for domestic producers to make it directly, instead of having it come into this country as an imported by-product, competition may lower the price, but for the present the AVERY CHEMICAL CO., 88 Broad St., Boston, Mass., look for an advancing market.

One of the most interesting machines on exhibit at the Philadelphia convention of Hosiery and Underwear Manufacturers was the Automatic Label Machine manufactured by the ROSE MACHINE CO., INC., 317 Widdicomb Building, Grand Rapids, Mich. This machine sews all four sides of the label slowing up at the corners, or turning the garment as quickly as a plain sewer can stitch a plain seam of the same length. After the garment is placed under the feed no attention on the part of the operator is required. This machine is used for underwear, overalls, etc. They also manufacture an automatic label cutting and folding machine.

EDWARD DUBIED & Co., Couvet, Switzerland, the well known manufacturers of flat knitting machines, have recently brought out a new type links and links or pearl stitch hand machine, shown on page 28, advertising section. This newly designed machine is fitted with marked improvements. The special features of the machine are,—the self-acting sinkers, the special shape of the needles, the manner of opening the latches, the change of tension on three positions, the cut of the needle beds and the taking off of the carriage.

The patented sinkers, used in this machine, work automatically. They do not hook the needle at all, but merely push and pull the same through a compulsory guidance, perfectly sure from the front to the back needle bed, and vice versa, so no lifting appliance or other auxiliary attachments are necessary for the movement of the sinkers. The result is a remarkably small needle breakage, and no trouble with the complicated sinker mechanism.

The needle when moving, can never get loose from the sinkers, so it can never happen that the needles stay between the two needle beds, or jump out of the same. The needles are taken either by one sinker or the other. The cam-boxes being especially so arranged in order to prevent the needles as much as possible from going forward uncontrolled from one bed into the other. Needles with a straight shank are used. The latches on the needles of the Dubied machine are opened by knives which can be adjusted by means of screws to one hundredth of an inch, and which operate the latch opening on the same principle as the knives formerly used on ordinary knitting machines.

By a simple movement of a lever, the stitch can be made tighter or looser in three different positions. The cams on the Dubied machine are very simple having no turnlock for the changing from left and left to plain stitch, the cams being sinkable. As all cams go on springs, no special arrangement is needed to put out of work the forward going lock. By pulling two levers back the carriage can be taken off when in any position. The needle beds are cut in such a manner that the entire width of the needle bed can at all times be used when racking and no space is lost.

The machine is built in any gauge, and any width from 10 to 40 inches. The small machines are generally worked by handle drive, while the wider machines have a balance lever motion. The machines come on a stand and usually with the following attachments: Two colored striper, racking over 12 to 20 needles; counting arrangement up to 2,000 courses; and change of tension on three positions. It can also be had with Jacquard attachment. The fabric produced on the machine is in plain links and links knit, the nearest machine made fabric to the hand knit work, having the same appearance on both sides. The Dubied links and links machine with its many improvements and advantages mentioned, working surely and economically, is without any doubt a perfect pearl stitch machine. The American agent for the Dubied machine is E. O. SPINDLER, Rooms 520-523, 350 Broadway, New York, N. Y., from whom all further information can be obtained, and machines can be seen in operation in his exhibition room.

Have you yet decided where to spend your summer vacation? If you wish to know all about something economical and interesting, address L. G. Lewis, G. P. A. Detroit & Cleveland Navigation Co., Detroit, Mich.

A MODERN GARMENT PRESSING MACHINE.

The Peerless garment pressing machine was invented to take the place of hand irons entirely, and cover every spot on all kinds of garments of both ladies and gentlemen, thoroughly cleaning, steaming and pressing, all in one operation. This machine has a number of unique advantages over other machines of this character. One of these advantages is known as the "shoulder buck," which is perforated so that steam is forced through the garment and a hard wood paddle is furnished with the machine for smoothing down the shoulder seams, etc. With this improvement is the specially made steam separator, so that only dry steam can come through into the buck. As the steam passes through the buck it is then forced through the garment which sterilizes same thoroughly and steams out all dirt and dust, so that by brushing carefully with a whisk broom, with and against the nap, all dirt is removed entirely.

A fact to be remembered is that a presser head heated with steam cannot scorch or gloss the garment. This shoulder buck also takes care of the upper parts of the sleeves in all coats and jackets, also the bust and rounded parts of ladies' garments, eliminating all hand ironing in order to finish the job. Another feature about this machine is that the operator at all times has free use of both hands, as the operation of the steam valve is done entirely by a slight pressure of the knee on pads below the table.

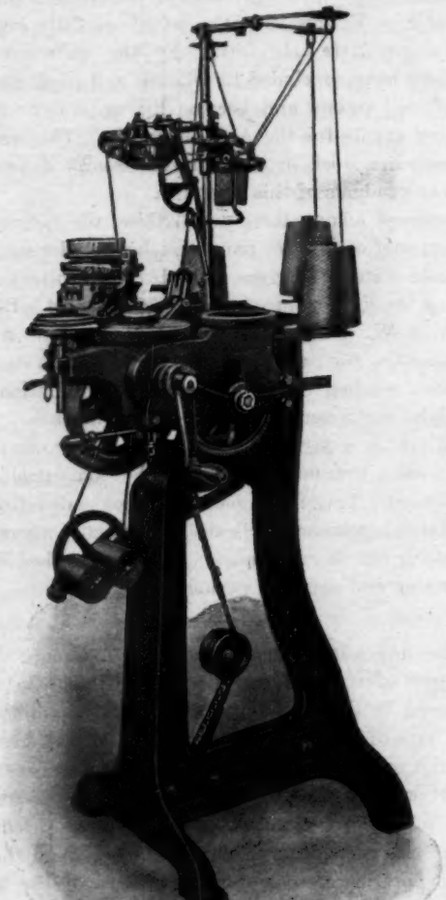
A machine is also manufactured in a size suited for knitting mills, factories, etc., and steams as well as presses garments thoroughly, so that when they leave the machine they are perfectly dry. This machine may also be used for cold work by merely shutting the steam valve on the entering head. This machine is thoroughly sanitary, removes all grime and dust; disinfects all garments, removing any fumes of gasoline from dry-cleaned garments; being heated by steam it is impossible for the operator to injure the most delicate fabric; it is compact and requires very little floor space; and the makers, the M. E. BLASIER MACHINE CO., of Utica, N. Y., claim that it is easy to operate and a great profit maker, all garments being ready to wear as soon as they leave the machine. Interested parties may secure further details by communicating with the manufacturers.

In May, the office of COTTON had the pleasure of a call from Mr. Dary of the DARY RING TRAVELER CO., of Taunton, Mass. Mr. Dary is widely known personally throughout the South, and the product he manufactures has the very highest reputation. As illustrating the satisfaction given by the use of the Dary travelers, the following interesting extract from a letter by T. H. Henderson, general superintendent, among many others, was shown to COTTON by Mr. Dary at the time of his call:

We have made careful tests off and on for the last eight years of your travelers, and have used most all makes of travelers in the South and we consider your travelers superior to any we have ever used. We find they run smoother, have less breakage of the ends, less waste and smoother yarn, and better running weaving. We can cheerfully recommended the Dary traveler to any one that is having any traveler trouble.

A FINE GAUGE KNITTING MACHINE.

Prominent among the exhibits at the convention of the National Association of Hosiery and Underwear Manufacturers held at Philadelphia May 22d to 26th, was the section devoted to the Invincible knitting machines manufactured by the JENCKES KNITTING MACHINE CO., of Pawtucket, R. I. This exhibit consisted mainly of fine gauge machines. One of them in particular was a 3½-inch diameter machine, which the makers claim is the finest gauge yet built in the seamless type of machine. It is only by the use of extremely fine gauges on small diameters that a ladies' hose embodying the features of an extremely narrow foot and ankle and wide and elastic top can be obtained. It has long been the aim of hosiery manufacturers to produce hose embodying these features and this aim is realized in this machine. These machines, which are known as



JENCKES INVINCIBLE MACHINE WITH 19C ATTACHMENT.

the "Invincible" machines, embody the many refinements which have been evolved from the maker's long experience as manufacturers of fine gauge machinery, and from the requirements of many critical and successful manufacturers who have specialized in the manufacture of fine gauge hosiery.

The extremely fine gauges in which this "Invincible" machine is built has made possible also the production of even a large size of half hose on a 3½ inch diameter machine. These machines were shown producing mercerized and silk fabrics, and attracted a great deal of attention from the visitors to the exposition. The company will be glad to furnish information to anyone requiring further details.

SMALL DIRECT CURRENT GENERATING SETS.

The necessity of good illumination is often felt in places far beyond the reach of any lighting system. For such conditions the small direct connected direct current generating set effectively takes the place of kerosene lamps and provides also a most convenient source of power for driving small machines such as vacuum cleaners, dumb waiters, etc. This type of generating outfit is apt to be operated by attendants who are not very familiar with the care demanded for electrical apparatus.

As they are isolated plants their continuity of operation becomes of vital importance, for here a break down means great inconvenience and of course, the paralysis of all power driven apparatus. The greatest possible care must be given to points of design in the machines that stand for ruggedness and durability. These qualities can be secured only by careful attention to mechanical details and design and careful selection of material on part of the manufacturer.

A pamphlet (Bulletin 130) recently issued by the CROCKER-WHEELER CO., of Ampere, N. J., contains some information regarding the design of these sets that is of interest to every prospective user. It is illustrated by halftone engravings.

In the March issue of *The Indicator*, that interesting publication issued monthly by the OTIS ELEVATOR CO., is a number of well written and instructive articles. The leading article of the issue is a short historical description of the city of Savannah, Georgia, and also a description of a number of Otis Elevator installations in different large buildings in that city. There are also two pages of important installations recently contracted for and the great number and size of these installations serve as an excellent barometer to indicate the present condition of the Company's business. It is also noted that they have changed their Omaha, Neb., office from the First National Bank Building to 1214 Howard St., and the Minneapolis, Minn., office has been removed from the Security Building to 415 South Fourth Street.

The WOONSOCKET MACHINE & PRESS CO., of Woonsocket, R. I., who make great claims for their specialty, roving and drawing frames, have recently furnished the following well known mills with their latest improved machinery: Louisville Cotton Mills Co., Louisville, Ky.; Greylock Mills, North Pownal, Vermont; Kavanaugh Knitting Company, Waterford, N. Y.; Salisbury Cotton Mills, Salisbury, N. C.; Waypoyset Mfg. Co., Central Falls, R. I.; T. F. Lloyd Mfg. Co., Chapel Hill, N. C.; Arcade Cotton Mills, Rock Hill, S. C.; Wm. A. Slater Mills, Jewett City, Conn.; Monument Mills, Housatonic, Mass.; Union Cotton Mfg. Co., Fall River, Mass.; Jennings Cotton Mills, Lumberton, N. C.; and Durham Hosiery Mills, Chapel Hill, N. C.

DO YOU EMPLOY A WATCHMAN?

"Perfectly simple, simply perfect," is a trite phrase that applies especially well to Howard clocks. The establishment of the clock business by Edward Howard in 1842 was along these lines, which have been closely followed. Mr. Howard built up an extensive personal reputation for making the best in the clock line, and a constant endeavor makes Howard clocks today as good as the reputation of Edward Howard. To do this is at the present time a great problem, because of the vastly increased cost of production, due to the rapid rise in value of materials of all kinds and in the cost of labor.

One of the most convincing proofs of the confidence that the manufacturing interests of the country have in Howard clocks is revealed by reorders from such well known concerns as the Pacific Mills, Everett Mills and Wood Worsted Mills, all of Lawrence, Mass., the Ponemah Mills of Taftville, Ct. and Lancaster Mills of Clinton,

Mass. Each of the above mentioned organizations have had Howard clocks in daily use for many years and in the construction of their new mills they decided to buy more Howard clocks, because of the great satisfaction they had derived from those already in use. No instance is recalled of a destructive fire in any of these plants, and possibly it may have been due to the Howard watchman clocks, which insure vigilance on the part of the night watchman.

A voluntary testimonial from two eminent Southern business men formed a portion of the mail recently received, to the effect that in their homes they both have clocks manufactured by the E. Howard Clock Co., upon which they had long depended for accuracy and reliability. Old friends are generally regarded as the best friends, and perhaps this is more true in a certain sense of clocks and watches than any other article to which one becomes attached.

The SWEETLAND WASTE CO., (Frank H. Sweetland), has recently established a factory at 394 First Street, South Boston, Mass., for the manufacture of all grades of machine waste. A specialty is high grade wiping waste put up in small cartons for automobile users. Mr. Sweetland was formerly of Adams Brothers, Boston.

THIS IS OF INTEREST TO THE MILL MANAGER.

In these days of modern mill conditions when cleanliness is next to Godliness, not only outside of the factory, but also inside of the factory, anything that tends to make mill conditions more sanitary is of particular interest to the mill manager and superintendent. Another equally vital subject in point of production value is the diffusion of light. When it is found that it is possible to attain both of these vital qualities by the usage of single simple material, then it is time for the manufacturer to bestir himself and in the language of the day, "get next."

The A. Wilhelm Company, of 24 Stone Street, New York City, whose products have been on the American markets for the last 53 years, have evolved a number of useful paints whose quality is guaranteed by the well known standing of the manufacturers. The officers of the Atlanta plant of the General Fire Extinguisher Co., after carefully investigating all the products, etc., used by the different mills in their field have concluded to take up and push the Wilhelm line of mill paints and become the general Southern distributing agents for the A. Wilhelm Co. They carry a full and complete stock in Atlanta for prompt delivery of the different products of this company.

Prominent among these are Lythite, the famous fire and weatherproof cold water paint. A dry powder simply mixed with cold water. It gives a hard, firm, sanitary finish, increasing the light of any building 50 per cent. BothLythite and A. & W. paint have been adopted by the Atlanta Iee and Coal Co. for use in their own plants, this decision having been reached after the careful investigation of other materials recommended for similar purposes. Sunlight mill white, is a strictly high grade, glossy oil paint, that gives a hard, firm finish, and beats the "sun" itself in radiating powers. This is especially recommended for use over fine textile machinery, delicate fabrics, etc., where no possible flaking can be considered. It can be washed with hot or cold water and remains permanently white.

The announcement is made by Lawrence Whitcomb, treasurer of the National Brake & Clutch Co., originally interested in the manufacture and use in automobiles and street cars of cork insert clutches and brakes, has so broadened the scope of its business among almost every class of power user by the introduction of cork inserts in many types of pulleys, clutches, brakes, frictions, tensions, etc., that it has been deemed expedient to change the name of the corporation to one more indicative of the business as at present conducted, and hereafter the business will be conducted under the style and in the name of THE CORK INSERT CO., and as such they will be pleased to serve you in the future as in the past.

The BERLIN ANILINE WORKS, 213-215 Water Street, New York, are sending to the trade a descriptive folder of their Guinea fast red 2-R which is an acid wool dye of good leveling properties. This is equally well adapted for woolen yarns, or woolen piece goods. Dye in the manner usual for leveling dyes, in a boiling bath with an addition of either Glauber salt and sulphuric acid, or bi-sulphate of soda. The product does not exhaust from a neutral bath.

NEW PUBLICATIONS.

ELECTRIC MOTORS: Their action, control and application. By Francis B. Crocker and Morton Arendt. Published by D. Van Nostrand Company, New York. 291 pages, 158 illustrations. Price, $2.50.

This work takes up the action, control and application of electric motors, with a special chapter on their application in textile work. The authors have presented a text of the application of electrical machinery in such a manner as to be of great service to textile engineers installing and operating electrical drives in their factories. The work covers direct current motors, single and polyphase induction motors, synchronous motors, and commutating alternating current motors. The subject of alternating current is decidedly complete and includes numerous illustrations, in connection with the discussion of the different types of motors. We recommend this work to those who desire a reliable reference on electric motors that will give results without the use of complicated mathematical formulas.

TEXTILES. By A. F. Barker, with chapters on the mercerized and artificial fibres, and the dyeing of textile materials, by W. M. Gardner; silk throwing and spinning, by R. Snow; the cotton industry, by W. H. Cook; and the linen industry, by F. Bradbury. Published by the D. Van Nostrand Co., New York. 375 pages, 86 illustrations. Price, $2.00.

This work contains chapters in spinning, weaving, designing and coloring, finishing, textile calculation, the manufacture of dress goods and linings, tapestry and carpet industry, and many interesting and useful tables for the textile worker. To those who require extensive but accurate information on the whole range of the textile industries, or to those desiring a sound base of general knowledge upon which to later build their knowledge of special subjects, this book is recommended.

THE WATERPROOFING OF FABRICS. By Dr. S. Mierzinski. Translated from the German by Arthur Morris and Herbert Robson. Published by D. Van Nostrand Co., New York. 104 pages, 29 illustrations. Price $2.50.

This work treats of waterproofing fabrics by covering over the fibres, or filling up the interstices between them with some substances insoluble in water, and contains many valuable formulas and methods for accomplishing this work. To the original German work, has been added an abridgement of the latest English waterproofing patents, which, however, deal almost solely with the waterproofing of garments. We heartily recommend this book to those who desire a treatise on the waterproofing of commercial fabrics.

HOW TO MAKE A WOOLEN MILL PAY. By John Mackie. Published by the D. Van Nostrand Co., New York. 69 pages. Price, $2.00.

This work is the outgrowth of a series of articles contributed by the author under this title to the *Textile Manufacturer of* Manchester, England. No attempt has been made to deal with the matters which are important enough to command the manufacturer's constant attention; but the author's aim has been to bring to light the necessity for looking after the small things which so often escape notice in the busy rush of mill life; and to endeavor to persuade his readers that these details, insignificant as they seem, are often important factors in making a mill pay and too frequently hold the balance between solvency and insolvency. While there are no listed illustrations for this book it contains a great many line illustrations of various books for systematizing the work in the mill and will be thoroughly appreciated by every mill manager, superintendent and foreman.

THE FRANK MOSSBERG CO., of Attleboro, Mass., are issuing their catalogue No. 101 of metal reels and spools, which contains illustrations and descriptions of stamped steel beams for narrow fabric looms; stamped steel beam heads for broad looms, special types of beams; stamped steel jack and dresser spools; steel and brass drop wires for loom stop motions; and their hank measuring machines for spinning, twisting, roving and drawing frames. This catalogue will be forwarded to those interested upon application.

The American Directory of Hosiery & Knit Goods Manufacturers of the United States and Canada for the year of 1911 has just been issued. This directory contains maps showing the location of mill towns together with lists of manufacturers classified according to goods made; manufacturers selling agents for knit-goods; New York knit-goods buyers; jobbers handling knit-goods; and department stores and large retailers buying knit-goods. This is the 29th Annual Directory of Hosiery and Knit Goods Manufacturers published by the Lord & Nagle Company, 144 Congress St., Boston, Mass. Copies of this directory will be sent postpaid for $1.50 a copy upon application to COTTON, Atlanta, Ga.

We announced in the April issue that the CORTRIGHT METAL ROOFING CO., 50 North 23rd Street, Philadelphia, Pa., would be glad to add the names of any of our readers to their list for a one year's subscription to their little magazine, *The Cortright Metal Shingle Advocate,* if so requested. A copy of Vol. 7 No. 3 of this little publication is at hand and we are frank to say that those of our readers who have not sent in their request for this magazine are missing something.

The ALLIS-CHALMERS CO., of Milwaukee, Wis., have issued two new bulletins recently. Bulletin No. 1079 treats of steam turbine units and contains a description of the Allis Chalmers type of machine together with numerous illustrations showing both details of construction and complete installations. Bulletin No. 1624 covers their standard line of centrifugal pumps and will prove very interesting to those interested in that class of machinery. These bulletins will be sent to interested inquirers upon request.

MOTION STUDY, by Frank Gilbreth, with an introduction by Robert Thurston Kent. Published by the D. Van Nostrand Company, New York. 116 pages, 44 illustrations. Price, $2.00.

This book, as the name implies, is a study of motion and is to find and perpetuate the scheme of perfection. There are three stages in this study; discovering and classifying the best practice; deducing the laws; and applying the laws to standardizing practice, either for the purpose of increasing output or decreasing the hours of labor, or both. To those who are interested in standardizing the trades this book will prove of great interest.

THE AMERICAN STOKER CO., 11 Broadway, New York City, are sending a late bulletin entitled "Furnace Stoker Proofs." This is a record, not a catalogue. It gives the names of a number of leading firms in particular fields of

endeavor and shows the dates when the first stoker was installed and then succeeding dates when repeat orders were received and the number of stokers for which such repeat orders were given. To intending purchasers of stokers, this pamphlet is one of exceeding value.

A new catalogue has been received from HUNGERFORD & TERRY, INC., Pennsylvania Bldg., Philadelphia, Pa., filtration engineers and manufacturers of pressure and gravity filters, continuous and intermittent water softeners and plans for the removing of iron from water. The purification of highly polluted waters for manufacturing purposes is one of their specialties. This catalogue contains illustrations of the various classes of filters with descriptions and rules for operating. There is also considerable data on the cost of operation, on the installation of the apparatus and the results obtained. There is also a partial list of the users of filters manufactured by this firm in different parts of the United States and a few testimonials from some of these customers. Those interested may secure a copy of this catalogue upon application to the main office of the company.

THE WILLIAM POWELL CO., with main office and factory at 2521-2531 Springrove Ave., Cincinnati, O., are sending out an illustrated catalogue for 1911 describing their line of manufactures including the "White Star" line of valves in the many styles and patterns; composite disk valves; regrinding hydraulic valves; extra heavy iron body valves; double wedge, self-adjusting gate valves; quick opening gate valves; automatic injectors; hose valves; mechanical oil pumps; sight feed lubricators; compression grease cups; water gauges; chime whistles; and hundreds of other similar parts manufactured by this company. The back pages of this catalogue contain a number of useful tables and formulas for the master mechanic that will prove handy for ready reference. Those interested may secure a copy upon application to the manufacturers.

PERSONAL.

Frank G. North, Southern sales agent for the Barber-Colman Co., with offices in Atlanta, Ga., who has been ill with appendicitis for the past seven weeks is now convalescent and will soon be able to again resume his regular duties.

Danker & Marston, 247 Atlantic Ave., Boston, Mass., announce that they have taken the American agency for the account of Richard Harwood & Son, Ltd. of Bolton, England, spinners and doublers of fine yarns, and are in a position to offer the trade the product of this well known concern, which represents sixty years of experience, either from their own stock in Boston or in direct shipments from the mill.

Arabol Gum G, one of the staples of the ARABOL MFG. Co., 100 William St., New York, when used in its pure state gives excellent results in light or heavy sizing of cotton warps and is especially recommended for use on export goods, such as China shirtings, drills, denims, coarse or medium goods, etc. Mixed with starch it gives more volume and adhesive power, adding, at the same time, elasticity and tensile strength.

William Howard Paine, consulting engineer of Providence, R. I., recently lectured before the Association of Mechanical Engineers on the new sewage pumping plant built for the city of Providence and installed under his supervision. The lecture was illustrated with numerous lantern slides showing the original plant, together with all the changes leading to the present new equipment. On the week following, the engineers visited the plant, where the system of operation was explained in detail by Mr. Paine. This plant handles all the sewage from the city of Providence with a total capacity at present of approximately 126,000,000 gallons in twenty-four hours.

Mr. Paine also officiated as toast master at a joint banquet held in Providence by the American Society of Mechanical Engineers and the Providence Association of Mechanical Engineers.

Among those at the American Cotton Manufacurers' Association convention at Richmond was Henry E. Sayward, well known to the yarn buyers of New England as associated with J. B. Janneson for the last five years. Mr. Sayward opened his own office at 170 Summer street, Boston, on May 1st, and during his stay in Richmond made desirable connections with many spinners of yarns suitable for the New England trade. As a yarn broker his experience and acquaintance with the needs of the yarn buyer should make his venture a successful one.

Channing Robinson, formerly with the Boston Yarn Co., has established his office as cotton yarn broker with Mohr and Fenderl, at 49 Federal street, Boston. With the yarn business Mr. Robinson represents George W. St. Aurant, manager for the United States and Canada of Mohr & Fenderl for the sale of Egyptian cottons.

Ernest Tompkins of Troy, N. Y., manager and treasurer of Tompkins Bros. Co., has formed a connection with the Wildman Mfg. Co., of Norristown, Pa., and will devote his time and energy to advancing the interests of this company. He still retains his interest with the Tompkins Bros. Co., the business of which will be conducted as usual by F. W. J. McKibben. Mr. McKibben is a graduate of McGill and Cornell Universities and has been actively connected with the Tompkins Bros. Co., for the past seven years.

The friends of A. B. Carter, will be pleased to learn that he has recently accepted the position of Southern representative for the Victor Shaw Ring Traveler Co., of Providence, R. I. Those desiring information concerning these travelers will secure prompt attention by addressing Mr. Carter at P. O. Box 95, Athens, Ga.

Notes from the Philadelphia Exhibition of the National Association of Hosiery and Underwear Manufac'urers.

The MANUFACTURERS SUPPLY CO., of Philadelphia exhibited samples of the well known brands of the Excelsior Needles Company's latch needles as well as looping, seaming and sewing machine needles and a line of belting, belt hooks and goods of a like character. J. J. Callaghan, Andrew McAleese and Charles Paulus of Philadelphia were in charge.

PAXTON & O'NEILL, of Philadelphia showed a line of their full automatic knitting machines which are so well known as to need no further description. Edward Jackson was in charge of the exhibit.

The CLING SURFACE CO., of Buffalo, N. Y., showed a machine with two belts, one treated with "Cling Surface" and one untreated running from a single shaft to separate friction breaks which were arranged with indicators showing the initial tention or tightening strain on the belt and the amount of work the belts were doing. Charles F. Chase the Eastern manager was in charge.